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The Master Mechanics' Convention.

The twenty-sixth annual convention of the Master Mechanics' Association began at Congress Hall, Saratoga Springs, Monday of this week. President R. C. Blackall called the meeting to order at 9:30 a. m. The President of the village of Saratoga made an address of welcome. This was followed by the presidential address of Mr. Blackall.

Mr. Blackall said that the membership had increased 109 in number since the last meeting, making a total now of 683. He spoke in general terms of the work of the year in the motive-power department, saying that it had been marked by common-sense methods in reduction of weight of reciprocating parts, in rating locomotives on tonnage basis, in more accurate accounting for coal consumed and "general relegation to the rear of such methods as figure a little and then guess at it." He said that the true keynote of economy will be found in bettering the condition of the men under the charge of the motive power officers.

One subject demanding attention is the relative efficiency of coal and the methods of determining it. He spoke in complimentary terms of the work of the railroad clubs and of the work done at the Purdue University.

The Secretary's report mentioned the fact that it is difficult to find students among sons of railroad men to fill the Association's scholarships at the Stevens Institute. One has entered the Stevens preparatory school and two are in the Institute. The preliminary examination seems to be too formidable for most of the young men and the Association has lost five school years for want of students. It seems desirable that the Association should ascertain if a change cannot be made, which will enable the sons of all railroad men to enjoy the benefits of these scholarships.

With regard to the standard decimal gage for tubes, wire, etc., the Secretary said that he had corresponded with all the railroads in this country and Canada urging the adoption of the gage and 67 companies had agreed to adopt it, and most of them have begun to order it. The Pratt & Whitney company will make the gages if the purchase of 500 is guaranteed.

The report of the Treasurer showed expenditures of \$3,566.58 and a balance on hand of \$813.34.

An auditing committee was elected, namely, Messrs. Setchell, Barr and McKenzie.

Further report of this convention must be postponed until our next issue as we are this week obliged to give up a great deal of space to the report of the Master Car Builders' Convention.

Axle and Journal Box for 80,000-Lb. Cars.

The M. C. B. Committee on Axle, Journal Box, Bearing and Wedge for Cars of 80,000-lb. Capacity consisted of Messrs. E. D. Nelson, J. H. Rankin, George Gibbs, William Forsyth, John Hodge, J. E. Simons and F. W. Chaffee.

An abstract of the report follows: The plan of the report is to discuss first theoretically the matter of strains in the axle, in which is included from practical information the important element of vertical oscillation on the springs. The question of fiber stress is then considered, and following this is a discussion of the journal proportions from the standpoint of friction and lubrication. Conclusions having been reached under these heads the design of the axle naturally follows, with specifications for the material to be used.

While it is a simple mathematical problem to design an axle of proper strength to support the load while the car is standing still, the problem becomes greatly complicated when the forces which come into play with the car in motion are taken into consideration.

In a general way it may be stated that for the static load only, the axle would be straight between the wheels, but when other forces are considered, the principal of

which is that due to pressure against the flange of the wheel while passing around curves and through switches, the axle becomes larger at the hub and tapered toward the center, in order to resist these additional strains.

There are available two general methods which give fairly satisfactory solutions of the problem. They are: The graphical method devised by F. Reuleaux, and the method developed by A. Wöhler, Chief Engineer of the Prussian State Railroads.

But before proceeding to apply either of these methods it is first necessary to determine what amount of horizontal force, caused by curves, switches and wind pressure, should be allowed. For this 40 per cent. of the static load is assumed as a maximum, this being very nearly sufficient to overturn a car whose center of gravity is 6 ft. above the rails.

Besides considering the horizontal force, in order that the results obtained should be of much value, it is also necessary to include the force due to vertical oscillation.

Wöhler states, from his experiments with four-wheel cars on the Prussian state railroads, that the weight on the journal is increased three-eighths by the force due to vertical oscillation. As this was determined by experiments on four-wheel cars and on railroads in Prussia, the committee endeavored to confirm this figure by experiments on American railways, and with eight-wheel cars.

The method employed was as follows: A car fitted with Fox trucks was selected, the box springs taken out, and each carefully calibrated to show the force necessary to compress it each one-eighth of an inch from the height of spring free to the spring when down solid. Each spring was then fitted with a simple recording apparatus intended to register the maximum compression of the spring in inches, and the springs were replaced in the trucks.

The car was a box car of 60,000 lbs. capacity, and was loaded to 67,800 lbs., the result being that 94,352 lbs. was the weight above the springs, giving 23,588 as the weight on each axle, or 11,794 lbs. on each spring, due to static load.

This car was then run from Renovo, Pennsylvania, to Canandaigua, New York, over the lines of the Pennsylvania Railroad, and back to the starting point, a distance of 398 miles. The springs were then removed and again calibrated, in order to check the former figures found, made before the car was started.

The maximum compression on one spring by this experiment was 23,413 pounds. This is not necessarily the actual vertical oscillation, but it may be considered as the maximum vertical oscillation when the horizontal force is taken as a maximum. Making this assumption, calculation gives 18,573 pounds as the maximum compression on one spring due to the horizontal force and the static load. This leaves a difference of 4,830 pounds, equal to 41 per cent. nearly of the static load on each journal, which was 11,794 pounds. As formerly stated, Wöhler found by experiment that the force to vertical oscillation was $\frac{5}{8}$ or 37.5 per cent. of the static load on each journal, so that the amount as found in the experiment made by the committee agrees closely with his results.

In the application of the data determined above to find the forces acting upon a car axle, besides employing the graphical method of Reuleaux, Prof. A. J. DuBois, of the Sheffield Scientific School, worked the matter out analytically, arriving at the following formulæ, upon which the diagram of Reuleaux is based, for the moments producing stress in the axle:

$$M = \left(\frac{W}{2} + \frac{Hh_1}{l} \right) x$$

when $x < b$.

$$M = \frac{Wb}{2} - \frac{Hh}{m} (x-b) + \frac{Hh_1x}{l} + Hh_2 + \left(\frac{W}{2} - \frac{Hh}{m} \right) h_2 \tan a$$

when $x > b$, $x < b + m$

$$M = \left(\frac{W}{2} - \frac{Hh_1}{l} \right) x$$

when $x > b + m$ in which x = any distance, from the point on the journal where the load is assumed to act, along the axle.

W = the total vertical pressure on the axle, including allowance for vertical oscillation.

H = horizontal force caused by curves, switches and wind pressure.

h = height of center of gravity of car above top of rails.

h_1 = height of center of gravity of car above center of axle.

h_2 = height of center of axle above top of rails.

l = length of axle between points of application of total load W .

m = distance between centers of rails.

b = distance from center of rail to point where load on journal is assumed to act.

a = the angle of the face of wheel tread with the horizontal.

By these formulæ, the moment producing a stress in any cross section of the axle can be computed. Then by the common formula

$$d = \sqrt[3]{\frac{M}{.0082 f}}$$

in which

d = diameter of axle in inches,

M = moment in inch pounds,

f = fiber stress of the material in pounds per square inch,

we can find the diameter for the corresponding cross-section.

Wöhler by his method, which is a mathematical consideration of the strains in the axle, based largely upon experimental data obtained with four-wheel cars on the Prussian railways, takes first the moments of each of the forces acting upon that portion of the axle lying between the wheels; he then adds these moments together, their sum giving the total of the moments acting upon that part of the axle lying between the wheels.

As a result of this method he arrives at the formula

$$M = .176 Wb + \frac{W}{32} r + 19.53 r \sqrt{\frac{H}{W}} + \frac{H}{4} r$$

which is the sum of the moments acting at the hub.

For the center of the axle the same forces are taken, allowing, however, one-half of the value of the moments producing pressure against the flange. The formula for the center of the axle is therefore

$$M = .176 Wb + \frac{W}{32} r + \frac{1}{2} \left(19.53 r \sqrt{\frac{H}{W}} + \frac{H}{4} r \right)$$

the notation in both cases being

W = the total weight of the car and lading, exclusive of the wheels and axles.

b = the horizontal distance from the center of the rail to that point on the journal at which it is assumed the weight is concentrated.

r = the radius of the wheel.

H = the force exerted by the wind against the surface of the car body.

From the results obtained by the last two formulæ, the diameters at the hub and at the center may be calculated by the formula

$$d = \sqrt[3]{\frac{M}{.0082 f}}$$

where M = the moment of the force,

f = the fiber stress,

d = the diameter of the axle, in the same way as before.

In regard to the formulæ of Wöhler, it is said that the term

$$19.53 r \sqrt{\frac{H}{W}}$$

which is the moment of the force due to side pressure against the flange, when the car passes around a curve, and also the term

$$\frac{W}{32} r,$$

the moment due to the force transmitted to the axle by the side pressure when passing around a curve, due to the friction on the rails before the flange comes in contact with the rail, are both the result of experiments on the Prussian railroads, and could not be confirmed by the committee.

In the general formulæ above referred to the committee has taken into consideration all the forces acting upon that portion of the axle lying between the wheels, except the force due to impact or percussion between the journal and the box with its contained parts. This latter is confined entirely to the journal and that portion of the axle lying outside of the wheel, and is not communicated to that part of the axle lying between the wheels, because in order to have any force applied at the journal produce a bending of that portion of the axle lying between the wheels, it is necessary that the part of the wheels in contact with the rails should move toward each other, and that the tops of the wheels should at the same time move away from each other. The resistance to this movement would be the inertia of the mass of the wheels themselves and also the friction of the wheels when sliding inwardly on the rails if such movement took place. The force of impact would not take place over a sufficiently long interval to allow any effect upon the axle between the wheels.

Wöhler states that the portion of the axle lying outside of the wheels can only be determined from practical considerations.

Axles of good material never break in service at a single blow; even in a wreck such axles will be found bent. Breakage may occur, however, as the result of poor material, bad design in respect to shape, the spreading of an initial crack, or from repeated applied stresses, above a safe limit in magnitude.

The various stresses to which a revolving axle is subjected, except those due to accidental shock, result in repeated reversals of load upon the fibers of the material, alternately compressing and extending the same.

The evidence to be obtained from the study of authorities upon this subject and from experience would appear to establish the fact that a bar of iron or steel when subjected to repeated reversals of a stress somewhat below the elastic limit of the material, as determined in the testing machine, will ultimately fracture in such service.

Wöhler found that the outer fiber stresses, where the strains alternated between tension and compression, might be safely taken as 17,000 lbs. per square inch for iron and 23,000 lbs. per square inch for steel, without limiting the life of the bar, but if the stresses exceed these limits, fracture would always occur if the number of repetitions of stress were sufficient.

From all evidence it seems reasonable to conclude, that a material will not be injured if strained repeatedly any amount within its natural elastic limit; that the so-called "fatigue of metals" may be noticed if strains are in excess of this natural elastic limit, and still within the elastic limit as ordinarily determined; that there is a possibility of the natural elastic limit being exceeded

at points locally within the structure of a large mass by a moderate total strain, thus starting local cracks which will extend to the ultimate destruction of the piece.

The committee believes that the above conclusions will apply without danger of serious error to the structure of a railway axle and within the limit of life of such axle, for there seems to be no evidence to show that when the fiber stresses are kept below the natural elastic limit, any apparent change in the structure will occur before the axle is condemned by reason of being worn out at the journals.

As to the effect of temperature, it seems to be pretty well established that the effect of ordinary atmospheric changes of temperature, say, from 20 deg. below to 120 deg. above zero Fahr., upon the physical properties of iron and steel, are slight and unimportant when stresses are applied without shock. But the effect of a change of temperature upon the ability of these metals to resist shocks is not so definitely known.

Experience in this country shows that few, if any, more axles are broken in cold weather than in warm, and it is reasonable to assume that the greater rigidity of the road-bed in winter would fully account for any greater percentage of breakage in that season than in summer. Carefully kept records of axles broken or bent in this country show that no larger number of axles failed in the colder months than in the warmer ones.

The committee consequently offers the opinion that temperature need not be taken into account in determining the design of an axle; but that with more definite information it may be advisable that certain limits for variation of temperature should be established as standards for use in testing axles under the drop.

Coming now to the allowable fiber stress, the committee says that if its foregoing conclusions are accepted, it follows that a design of an axle which, under all conditions of repeated straining, keeps the fiber stress within the natural elastic limit of the material, will be a safe one, so far as danger of breaking is concerned.

It has been stated that Wöhler found that for an unlimited number of reversals of strain, the fiber stress may safely be taken at 17,000 lbs. per square inch for iron and 23,000 lbs. per square inch for steel. But as his experiments were made with small specimens, and as axles are subjected to various stresses, apparently not included in his investigations, it would seem best to look into the fiber stress of axles in service and see what can be learned. The method of Reuleaux, already given, can readily be utilized to determine the fiber stress of any given axle. It is only necessary to find the moments and from the actual diameters find the fiber stress by a change in the formula already given for finding the diameters when the fiber stress is known.

The committee has followed this method for axles already in use, where they have been in service a number of years, and where the number of axles has been sufficient to justify safe conclusions by such an analysis.

Taking the fiber stress calculated in this way it was found that a large number of axles had broken where the fiber stress was 28,000 lbs. Where the fiber stress was 23,000 lbs. and less, the records show that axles have been practically free from failure by breaking.

It is important to note this fact, because some writers have based their designs upon considerations of static loads only, and naturally, for the same design, their allowed fiber stress would be a great deal less than the figures given above.

The committee has concluded, therefore, that if the new axle is designed, using the strains as found by Reuleaux's method, and if a fiber stress of 22,000 lbs. per square inch is taken for the portion of the axle between the wheels, and the material provided in the specifications is used, a safe design will be the result without much surplus material.

Concerning the fiber stress in journals, this portion of the axle is subjected to strains of a more complicated nature, and the results of experience will be the safest guide.

From an examination of the fiber stress in journals which have broken and which have not broken, it is concluded that, for the diameter attained when the journal is worn to its limit, the fiber stress for static load should not exceed 11,500 lbs. per square inch. It would be safer to keep it close to 10,000 lbs. per square inch, which figure has been adopted for the diameter when it has reached the limit of wear.

The Journal—Friction and Lubrication.

Considering the proportions of the journal with respect to friction and lubrication, the principal figure desired is the maximum pressure per square inch which can be placed on freight-car journals without undue friction, wear of bearing and liability to heat.

Laboratory experiments made in this country and Europe do not give any satisfactory data on this subject, and we are compelled to assume that the $4\frac{1}{4} \times 8$ -in. journal is satisfactory for cars of 60,000 capacity, and determine from this the pressure per square inch to be allowed on the new journal. The fact that bearings run some time before they increase the bearing surface to double the amount assumed, leads the committee to believe that it would be safe to proportion a car journal for a load of 600 lbs. per square inch.

In its calculations the committee assumed the probable maximum conditions for concentration of the load on journal, which would be when the collar of the journal is worn to $\frac{1}{4}$ in. in thickness from contact with the brass and the brass worn off $\frac{3}{4}$ in. on the end next to the collar of the journal. This occurs when the horizontal force previously explained is at its maximum.

Design of Axle—Reuleaux's Method.

Having prepared the general methods to be followed and determined the necessary data, the committee next passes on to the design of an axle for 80,000-lb. capacity car, first making the following necessary assumptions for the probable weights of the parts:

Gondola Car.	
Weight of body and trucks.....	35,600 lbs.
Lading.....	80,000 "
20 per cent. additional lading.....	16,000 "
	131,600 "
Deduct weight of wheels and axles.....	7,600 "
	124,000 "

or 31,000 lbs. per axle.

Refrigerator Car.	
Weight of body and trucks.....	43,600 lbs.
Lading.....	80,000 "
10 per cent. additional lading.....	8,000 "
	131,600 "
Deduct weight of wheels and axles.....	7,600 "
	124,000 "

or 31,000 lbs. per axle.

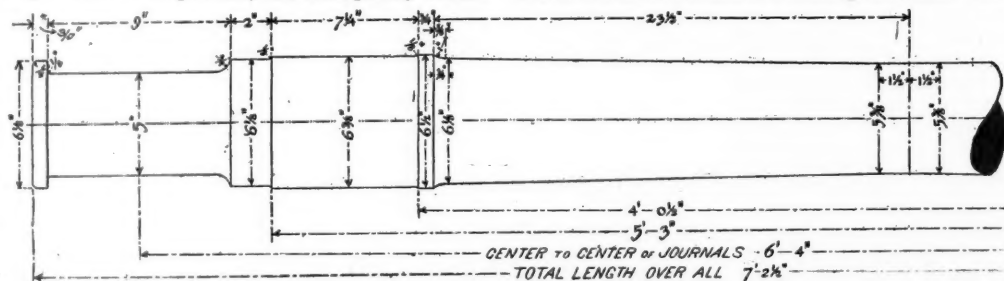
The axle recommended by the committee is therefore designed to carry 31,000 lbs., including body, trucks and lading. It should be distinctly understood that the axle recommended is to carry this weight as the sum of the weights of the car body and trucks and lading when using 33-in. wheels.

As the result of their calculations by Reuleaux's method, they arrive at these figures: 6.21 in. for the diameter of the axle at the hub, and 5.90 in. for the diameter of the axle at the center.

From the following table, which shows a comparison of the moments by the two methods, it will be seen that the diameter calculated by Wöhler's method would be somewhat smaller than those determined above.

	Moment at hub.	Moment at center.
Reuleaux.....	517,300	321,957
Wöhler.....	413,389	346,442

As the method devised by Wöhler contains several elements, based upon experimental data obtained on the Prussian railways, and as it is not possible at this time to say how far such data is applicable to the conditions on American railroads, it is concluded that the method of Reuleaux does, in a general way, give a more satisfactory solution of the problem, and consequently the mo-



Proposed Standard Axle for 80,000-lb. Cars.

ments as obtained by his method were employed for finding the requisite diameters of the wheel seat and center.

Axle Specifications.

As to the material to be used in this axle, it is evident that in specifying iron or steel, these materials of known qualities must be employed in order to produce an axle of proper strength.

The committee recommends the following specifications for axles of this design:

Specifications for Steel Axles.

1. Axles will be ordered not less than 100 on one order. All axles must be made and finished in a workmanlike manner, and must be free from cracks or seams or flaws which can be detected by the eye. All parts must be rough turned, except the collars immediately back of the wheel-seats between the wheels.

2. All axles must be made of steel, and the material desired has the following composition:

Carbon.....	0.40 per cent.
Manganese, not above.....	0.50 "
Silicon.....	0.05 "
Phosphorus, not above.....	0.05 "
Sulphur, not above.....	0.04 "

3. All axles must conform in sizes, shapes and limiting weights to the requirements given on the order or print sent with it. The rough turning must be done with flat-nosed tool in such a way as to leave the surface free from ridges; and in centering them 60° degree centers must be used.

Not less than thirty axles from any one heat having passed the foregoing inspection, the inspector will select from each pile or heat one axle at random and subject it to the physical test prescribed for such axles as may be under consideration. If the test axle fails to fill the physical requirements, all the axles from that heat will at any time be considered again. Borings for analysis will be taken by means of a $\frac{1}{8}$ -in. diameter drill, acting parallel to the axis of the axle, and starting with its center in the last described prick punch mark. The borings will be analyzed in accordance with standard methods.

6. All axles will be tested physically by drop test. The testing machine must have these essential parts. The points of supports on which the axles rests during test must be three feet apart from center to center; the tup must weigh 1,640 lbs.; the anvil, which is supported on springs, must weigh 17,500 lbs.; it must be free to move in a vertical direction. The radius of supports and of the striking face on the tup in the direction of the axis

of the axle must be 5 in. When an axle is tested it must be so placed in the machine that the tup will strike it midway between the ends, and it must be turned over after the first and third blows. After the first blow the deflection of the axle under test will be measured in the manner specified here below.

7. It is desired that axles, when tested under the drop as specified above, should not deflect more than $5\frac{1}{2}$ in. after the first blow, and should stand five blows without rupture or fracture in any way.

8. Axles will be considered to have failed on physical test and will be rejected, if when tested under the drop as specified above, they rupture or fracture in any way as a result of five blows from a height of 43 ft., or if the deflections after the first blow exceed $6\frac{1}{2}$ in.

9. Axles will be considered to have failed on chemical test and will be rejected, if the analysis of the borings taken as above described gives figures for the various constituents below outside the following limits, viz.:

Carbon.....	below 0.35 per cent., or above 0.50 per cent.
Manganese.....	0.60 "
Phosphorus.....	0.07 "

Specifications for Iron Axles.

All axles must be cut off and faced to exact lengths, and be centered with 60 degree centers. Axles must be made of double-worked forged scrap, 80 lbs. of new bar iron worked into the center of the axles being allowed if desired. Axles must be well hammered and free from any clearly defined open seams. They must finish in the lathe with journal free from flaws in the shape of holes, pieces shelled out, or open seams large enough, so that with a knife blade scale or dirt can be removed from such seams, or open seams showing a clear opening of $\frac{3}{8}$ -in. or over, and being more than 1 in. long. The maker's name, or initials, must be stamped plainly on each axle.

For each 100 axles or fraction thereof ordered one additional axle must be furnished for test. This axle will be selected at random from the pile and subjected to the prescribed drop test for iron axles of its class. If it stands the test the 100 axles, or fractional part thereof that it represents, will be inspected, and only those accepted that are made in a workmanlike manner and are free from defects mentioned in these specifications. All

axles received are subject to rejection if they do not finish in the lathe in accordance with the requirements herein given. Axles will not be accepted if the diameters fall below the dimensions for forged sizes given in the blue prints or if exceeding those dimensions by more than $\frac{1}{8}$ in. Car axles in the rough must not have less than the prescribed minimum weight, nor more than the prescribed maximum weight for axles of their class.

Axle Drop Test.

All axles will be tested physically by drop test. The testing machine must have these essential parts: The points of supports on which the axle rests during test must be 3 ft. apart from center to center; the tup must weigh 1,640 lbs.; the anvil, which is supported on springs, must weigh 17,500 lbs.; it must be free to move in a vertical direction. The radius of the supports and of the striking face on the tup in the direction of the axis of the axle must be 5 in. When an axle is tested it must be so placed in the machine that the tup will strike it midway between the ends, and it must be so turned over after the first and third blows. After the first blow the deflection of the axle under test will be measured.

It is desired that axles when tested under the drop, as specified above, should not deflect more than $5\frac{1}{2}$ in. after the first blow, and should stand five blows without rupture or fracture in any way.

Axles will be considered to have failed on physical test and will be rejected if when tested under the drop, as specified above, they rupture or fracture in any way as a result of five blows from a height of 23½ ft., or if the deflections after the first blow exceed $6\frac{1}{2}$ in.

In both of these specifications it will be noticed that provision is made for a definite form of apparatus for the drop test. The difficulties with the form of apparatus for the drop test heretofore used have been: First, the same drop produces less deflection in summer than in winter, due to the ground being softer at the former season, and hence there is more yielding or elasticity in the foundation of the anvil block; second, the possibility of manufacturers using a more elastic or yielding foundation in order to produce less shock upon the axle from the drop test; third, tests made with one machine are not comparable with those made on another, on account of the variation in the character of the foundations.

The apparatus proposed overcomes all of these objections, as the anvil block rests upon springs and has at all times practically the same inertia, and the blow upon the axle produces the same force of impact, regard-

less of the character of the ground upon which it may be located.

Concerning the employment of iron or steel it may be reasonably assumed that for iron axles it is impossible, even with the best material, to obtain uniformity. A test made of one axle out of a lot does not, therefore, represent the quality of the lot from which it is taken.

For steel axles the specifications submitted above will insure, within a reasonable probability, that the lot from which one is taken is fairly represented by the one axle tested.

Furthermore, it is now almost impossible, or at least will be impossible within a short time, to obtain sufficient properly selected wrought scrap to insure axles of this material being of the quality desired. The use of steel for various purposes has become so universal that it is an impossibility to know, without altogether too elaborate an examination, that scrap material supposed to be iron contains no steel; and the presence of steel pieces in wrought-iron scrap used for axles will certainly produce an axle which will have points of dangerous weakness.

In order to make clear the difference between an iron axle and one of steel, the following table shows the fiber stresses at the hub and center for the M. C. B. $4\frac{1}{4} \times 8$ axle and the proposed axle with 5×9 journals, which are calculated for the static load only, and gives also the factor of safety based upon ultimate strength:

	Hub.		Center.	
	Fiber Stress.	Factor of safety.	Fiber Stress.	Factor of safety.
M. C. B. $4\frac{1}{4} \times 8$	6,582	11.39	10,331	7.26
Proposed 5×9	6,342	11.82	10,011	7.49

In this table the factor of safety is based on steel of an ultimate strength of 75,000 lbs. per square inch, and iron of an ultimate strength of 55,000 lbs per square inch.

The table shows for the factors of safety at the centers, that if the strength of steel is 100, then the strength of iron is 73.3.

It must not be supposed that the factors of safety here given represent the actual margin of strength in the axle referred to. They are purely hypothetical factors of safety based upon only the strains due to static loads, and the actual factors of safety where all strains are

The fillet at back end of journal is made large to prevent the rapid wearing to a small fillet at this part of the journal.

Electric Passenger Cars.

The Barney & Smith Car Company has just completed a contract for a large lot of electric passenger cars for the Mt. Clemens Interurban Line, running between Detroit and Mt. Clemens, Mich.

Photograph No. 1 shows the exterior of the vestibuled closed motor car. These cars are 31 ft. 5 $\frac{1}{2}$ in. long over

Some of the cars furnished are of a convertible open and closed summer and winter type. These are 31 ft. 6 $\frac{1}{4}$ in. long over the body, 40 ft. 10 in. long over the nosepieces and 8 ft. 6 in. wide over the sheathing, and are of the same general design as the vestibuled closed motor car, except that the side windows are in one large light, and they have open platforms with folding gates at each side instead of the vestibule.

Photograph No. 3 shows the interior of one of these cars in its winter outfit, the seats being slatted with spindle backs, Wheeler "walkover" pattern, the inside finish be-



Fig. 1.—Vestibuled Closed Motor Car

the body, and 41 ft. long over all, being 8 ft. 6 in. wide over the sheathing. Both ends are vestibuled with doors on each side of the vestibule. The roof and hood are of the regular steam-car pattern. The side windows are double upper and lower light, the upper light being embossed glass. The outside is sheathed with narrow siding straight up and down in the regular passenger car style.

Photograph No. 2 shows the interior of the same car, from which it will be noticed that the car is seated with rattan-covered reversible seats of the Wheeler "walkover" pattern, each car being equipped with four section tables. The end doors of the cars are the regular steam-car pattern, having two lights of glass, the upper light to drop for ventilation. The windows are equipped with

ing ash and cherry with birdseye maple veneer headlining, handsomely decorated. The most pleasing point of this car is the convertible feature. In converting the car to its summer use, the glass sashes in the windows are removed and also the solid wood panels below the windows, and in their places are put wire screen guards. This convertible feature is very perfectly worked out in all its details, so that when the wood panels are in their places the cars are absolutely water and storm proof.

All of the cars are mounted on the manufacturers' standard Class "F" interurban motor trucks, and are equipped with the Hunt air-brake. All sills are heavily plated with steel, which makes them very substantial. The exterior of the cars is painted a bright vermilion



Fig. 2.—Interior of Vestibuled Closed Motor Car.

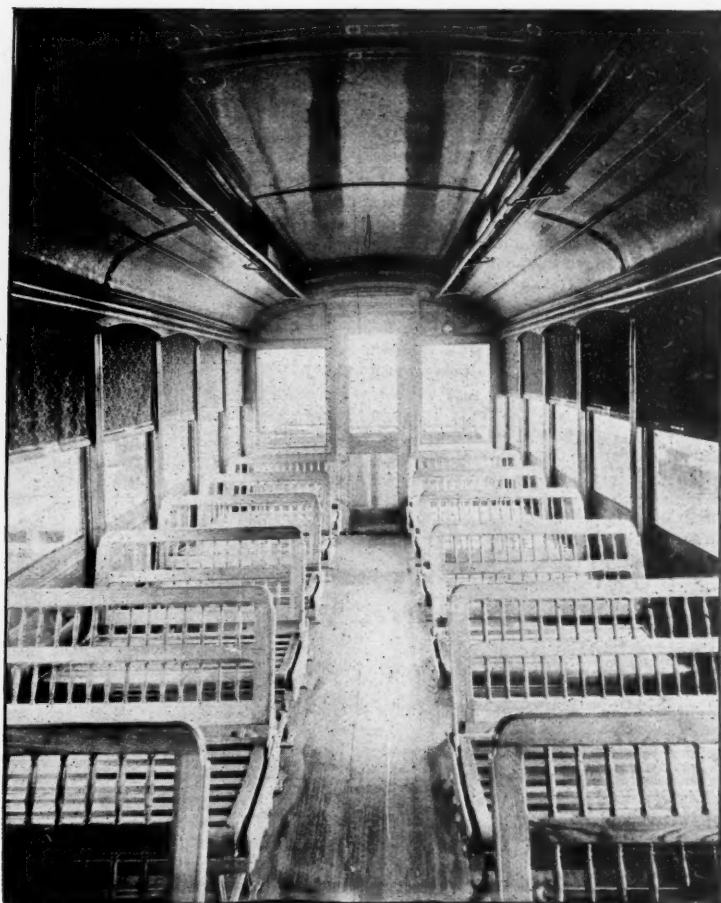


Fig. 3.—Winter Interior Convertible Trail Car.

considered will be much smaller. The table merely indicates the relative values of iron and steel.

Designs for Axle.

The plate gives the design of axle to carry 31,000 lbs.

It will be noticed that the axle is cylindrical for a distance of 3 in. at the center, in order to get rid of the angle at the center, as indicated by Reuleaux's diagram. The wheel seat is made 6 $\frac{1}{4}$ in. to provide $\frac{1}{8}$ in. reduction in fitting axles to wheels, and still be above the theoretical diameter. The fillet at outer end of journal is made as small as possible without getting a sharp corner, and still making it easy to obtain, in ordinary shop practice

tapestry curtains on spring rollers and with automatic fixtures in the bottom. The cars are also equipped with basket racks. The ceiling is birdseye maple veneer, handsomely decorated, while the inside finish of the car is cherry, all the finish being of the most modern design. The cars are heated with hot water circulating pipes from the Baker heater, the heater being located on the front platform of the car inside of the vestibule. One of the features of these cars is the trap door over the step inside on each platform. When the vestibule doors are closed the trap doors can be let down, forming a solid and safe floor over the entire vestibule.

color and lettered and ornamented in gold, which gives a very striking appearance to these trains.

Railroad Telegraph Superintendents' Meeting.

The fifteenth annual meeting of the Association of Railway Telegraph Superintendents was called to order by the President, M. B. Leonard (Chesapeake & Ohio), at 10 a. m. Wednesday, June 17, at Old Point Comfort, Va. The following new members were admitted: J. B. Gee (Cleveland, Cincinnati, Chicago & St. Louis), W. H. Lovekin (Toledo & Ohio Central), [H. A. Tuttle (Soo

Line), J. R. Michaels (St. Paul & Duluth), A. B. Taylor (West Shore), W. F. Williams (Seaboard Air Line).

Reports were received from the Treasurer P. W. Drew, showing the association to be in a healthy financial condition. The Committee on Topics reported the following papers: "Educating Operators in the Handling of the Switch Board," by W. F. Packard (C., H. & D.); "Reduction of Relay Resistance," by U. J. Fry (C., M. & St. P.); "Highway Crossing Alarms," by G. L. Lang (New England); "Telegraph Line Construction and Reconstruction," by H. C. Hope (C., St. P., M. & O.); "The Telephone in Railroad Practice," by W. W. Ryder (C., B. & Q.). All of these papers brought out intelligent discussion extending through the two days of the session. The election of officers resulted as follows: President, G. M. Dugan (Illinois Central), Chicago; Vice-President, J. W. Lattig (Lehigh Valley); Secretary and Treasurer, P. W. Drew (Wisconsin Central), Milwaukee. Niagara Falls was selected as the place of meeting in 1897.

Missouri Railroad Commissioners' Report.

The twentieth annual report of the Railroad Commissioners of Missouri, H. W. Hickman, James Cowgill and Joseph Flory, has just been issued, six months behind time and nearly twelve months after the end of the year for which statistics are given. A considerable portion of the delay was due to the failure of railroad companies to send in their reports. The length of railroad in Missouri June 30, 1895, was 6,565 miles, being 39 miles more than on June 30, 1894. The Commissioners present a comparative table showing some of the traffic statistics for 14 of the principal roads. The average receipt per ton mile for all the 14 roads was 1.017 cents and the average train load 156.43 tons. In 1895 the Legislature ordered this Board to appoint inspectors of watermelons in four counties and this inspection has proved "very satisfactory." Statistics are given of the mileage, stock and debt, earnings, traffic, etc., of all the roads. The figures for Missouri are separated as far as possible, but some roads did not report for Missouri separately, and so the results are of but little value. Notes are given of inspections of physical conditions made by the Commissioners, and new laws relating to railroads are given in full. A large part of the book is taken up with notes of hearings and inquiries.

Standard Automatic Brake-Slack Adjuster.

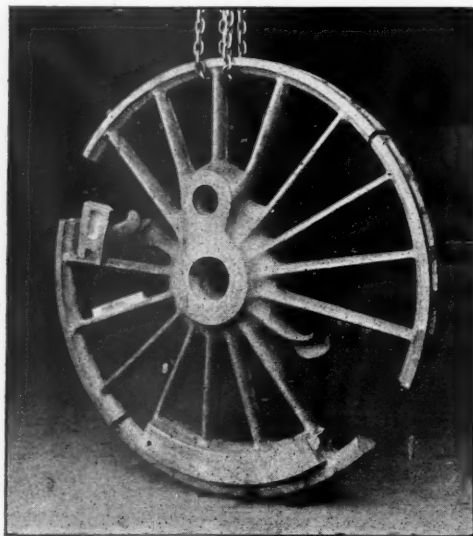
The engraving shows the standard automatic brake-slack adjuster made by J. H. Sewell, of Worcester, Mass. It consists of two bars of cast steel and malleable iron, connected to the cylinder and piston levers. The smaller or adjuster bar is attached to the cylinder lever by a pin which is placed in the proper ratio from a similar pin in the fulcrum bar. The other end of the adjuster bar forms a guide within which the piston lever can move, the guide being retained in its relative position to the fulcrum bar by a small pin through the lever sliding in a slot on the under side of the adjuster bar. The larger or fulcrum bar is connected to the cylinder and piston levers at the same place and with the same pins usually employed to connect the ordinary tie rod, and has a bar with ratchet teeth sliding in a tube or casing, within which are pawls made to engage the ratchet teeth as seen in the lower figure of the engraving. From the lower side of the adjuster bar and of the fulcrum bar are suspended two short levers, the upper part of which form a cam or eccentric. The inner side of the name plate is chambered as shown in the upper figure in the cut.

When the brake is applied, the upper end of the cylinder lever moves in the guide of the adjuster bar, tripping the locking device and compressing the adjuster bar enough to allow the brake to be fully applied. On releasing the brake, the lever travels back to the pin in the end of the guide, and provided undue slack has been present on application of the brake, the piston, on going home, will compress the fulcrum bar, the piston lever having the pin in the adjuster bar as a fulcrum. Should it be necessary to get slack for any other purpose, the small levers can be turned to a horizontal position and held there, thus raising the name plates and disengaging all of the pawls from each of the two ratchet bars, permitting the ratchet bars to slip out, creating the necessary slack for repairs. When these levers are released, they fall back to their normal position by gravity, allowing the name plates to drop and the pawls to again engage the ratchet bars. After the first few applications of the brake the adjuster will have taken up all the undue slack and the piston travel will become the same as before slack was made.

Steel Cast Driving-Wheel Center.

Among the exhibits at the Master Mechanics' Association at Saratoga was an open-hearth steel cast driving-wheel center made by the American Steel Casting Co., Thurlow, Pa. The engraving shows two of the spokes

in the wheel which were twisted and distorted while the steel was cold. Although we cannot give results of tests upon this metal, the following values are given as results of tests upon a cast-steel locomotive frame exhibited by the same company: Ultimate tensile strength,



Steel Cast Driving-Wheel Center.

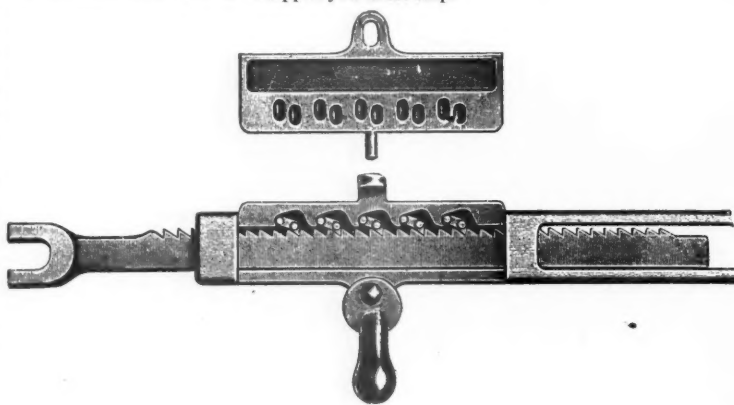
70,000; elongation, 30 per cent.; reduction of area, 49 per cent.

Bezer's Motion Signal.

Mr. Henry Bezer, the originator of the motion signal described in the *Railroad Gazette* of June 14 last, has put up three of his signals on the line of the Delaware, Lackawanna & Western, between Hoboken and Kingsland, N. J., and they have been in operation several months with very satisfactory results.

We reproduce from our former description a sketch showing the construction of this signal and the manner of its operation. The radial lines, which give the appearance of a fan, indicate the signal revolving. The semaphore blade is pivoted at its center upon an iron bracket fixed to the post at or near its top. The blade is operated by an electric motor which is contained in a box, fixed to the bracket, of such shape that when the blade is at rest the box is concealed behind it. This box, made of iron and water tight, is 10 in. x 8 in. x 8 in. The three block sections (on the westbound track), one of which includes a drawbridge, are wired and connected up for a rail circuit, and the signals are automatically operated by this circuit. The opening of the circuit by the entrance of a train or car upon any portion of the block section sets the electric motor into operation and causes the signal blade to revolve, about 10 revolutions a minute,

and this motion is the all-clear signal. The blade at rest, in any position, indicates "stop," though the apparatus is so constructed that it always comes to rest in the horizontal position. To the engineman the language of the signal is, "If I am in motion you can be; if I have stopped you must stop."



Standard Automatic Brake-Slack Adjuster.

The lamp has been arranged in a manner different from that shown in the engraving. Instead of being fixed so as to be intermittently obscured by the revolution of the blade in front of it, it is fixed upon a vertical spindle, supported by the box, in a position above the blade, and is moved by the turning of this spindle on its axis, thus making a flash light independent of the movement of the blade. Two opposite sides of the lantern have red glasses and the two other sides have white, so that the white light appears 20 times a minute. On first coming in sight of a signal at a distance one sees, of

course, only the white light; but on approaching nearer to it the red gradually comes in sight.

In introducing the element of motion Mr. Bezer claims that, in addition to the signal not depending upon the responsive action of automatic mechanism to change it from the indication of safety to that of danger, he makes the best possible provision against a bad background, and one of the signals which he has erected effectively illustrates the strength of this point. A dull brown building being the background and the color of the blade being red, not especially bright. Both the day and the night signals are obviously easily distinguishable from all surrounding objects or lights. The night signal cannot be confused with city lights, and the question of color blindness is wholly eliminated. Mr. Bezer reports very favorable opinions from the enginemen on the Lackawanna road. This is a fact peculiarly favorable to the device, for it is evident from the radical difference between this signal and all other block-signal apparatus used in this country that a runner's opinion must be intelligent. He cannot well misconceive the differences between this and other signals, or the reasons for them, and his opinion would naturally be pretty decided one way or the other.

Mr. Bezer has the signals of adjoining blocks interlocked in the way described in his prospectus, quoted from in our former article; that is, any signal, when in condition to give the all-clear indication, locks in the stop position the signals each way from it. Thus signal C cannot give the all-clear indication until signal B has gone to danger. With this arrangement he does away with counterweights. All the signals stand normally at danger, the circuit operating the signal being never closed by the track-circuit relay except when a train has approached within one block section.

Mr. Bezer uses a storage battery, with a primary battery constantly charging it. Thus the primary may be entirely exhausted without disabling the signal, and the accumulator furnishes sufficient reserve power to give ample time to renew the primary. Both primary and secondary are non-freezing and need not be sunk in deep wells.

Mr. Bezer's address at present is Kingsland, N. J.

A Heavy Bar Shear.

The cut herewith illustrates the No. 5 Heavy Bar Shear made by Hillis & Jones Co., of Wilmington, Del. It is intended for general shearing of flat, round or angle bars. The general type is of the guillotine frame construction, in which the metal is placed so that it takes the direct strain to the best possible advantage. The sliding head on this machine, being unusually heavy, is counterbalanced by means of a cylinder adapted for either air or steam pressure. The pipe leading to this cylinder enters at the under side of the piston, so that the pressure is utilized to cushion the head on its downward stroke only. The capacity of this machine is equal to shearing 4-in. square bars, or the heaviest sections of angles cold, our illustration showing the angle knives in position. The driving is done by means of an iron-clad electric motor, mounted on the bed plate and directly connected to the flywheel driving shaft by means of a pair of cut gears. This makes a convenient and substantial arrangement in every respect, with entire absence of belting or necessity for running expensive shafting to drive the tool. Larger and smaller sizes are furnished.

The Master Car Builders' Convention.

The thirtieth annual convention of the Master Car Builders' Association met at Congress Hall, Saratoga Springs, June 17, President Lentz calling the meeting to order at 9.30 o'clock in the morning. The meeting was opened with a prayer, which was followed by an address of welcome by the President of the village of Saratoga, after which Colonel H. S. Haines, by invitation of the Executive Committee, made an address, which was received by the members of the Association with a standing vote of thanks.

Colonel Haines spoke of the great service done by the association and by the Master Mechanics' Association in organizing the technical staff of the railroads of the country, in which work these associations were pioneers. Their success has incited officers of other departments to organize for like purposes. The speaker gave a rapid review of the improvements that had been made in the construction of passenger cars and freight cars during the many years which he has been in actual railroad service, and he spoke especially of the great variety of attainments and qualifications which a good master car builder must have—he must be an engineer, an architect and an artist.

Colonel Haines suggested that the next step in the development of the car would be in diminishing the weight proportionate to the load carried, which must apply not only to passenger cars, but to freight cars. The tendency of railroad development calls for lighter and stronger cars.

He spoke of the intimation that is sometimes made that the associations of technical railroad officers was to discourage inventors, and he developed the idea that they do not tend to discourage inventors, but to keep inventors from wasting their energies in useless fields.

The address of Colonel Haines was followed by that of Mr. J. S. Lentz, Superintendent Car Department of the Lehigh Valley Railroad and President of the Association. Mr. Lentz spoke of the improvements which had taken place this year in the business of the railroads

and of the builders of cars and locomotives. As an evidence of this improvement he said that in the year from May 1, 1895, to April 30, 1896, 100 per cent. more orders for cars were placed than in the year immediately preceding.

He spoke at some length of the work of the Executive Committee in arriving at standards for equipping cars with handholds and for determining the heights of couplers. The committee has done a great deal of work in the matter, the result of which will appear in the reports to the convention.

He spoke particularly of the standards of the association for printed matter and wished to impress on the minds of the members the importance of using the standard sizes. He called the especial attention of supply men and of the publishers of railroad journals to these standards, and suggested that printed matter that does not comply with the standards is very likely to find its way to the waste basket because it is inconvenient to file.

Mr. Lentz spoke especially of the matter of the 80,000-lb. car. At the last convention he recommended the appointment of a committee to report on a design for a car of that capacity. The recommendation was complied with only so far as to appoint a committee on axle, journal box, bearing and wedge, but the general question was not favorably considered by the Committee on Subjects. Mr. Lentz is still of the opinion that such a car will be the car of the future and that measures should be taken to design a standard.

He mentioned the fact that the Arbitration Committee had considered 330 cases and that the time spent by the members of the committee and the cost of their work have become so great that it is desirable to make some effort to reduce the number of cases submitted. To that

Correspondence: A. M. Waitt, R. P. C. Sanderson, C. A. Schroyer.

Auditing: E. W. Grieves, J. N. Barr, Thomas Files.

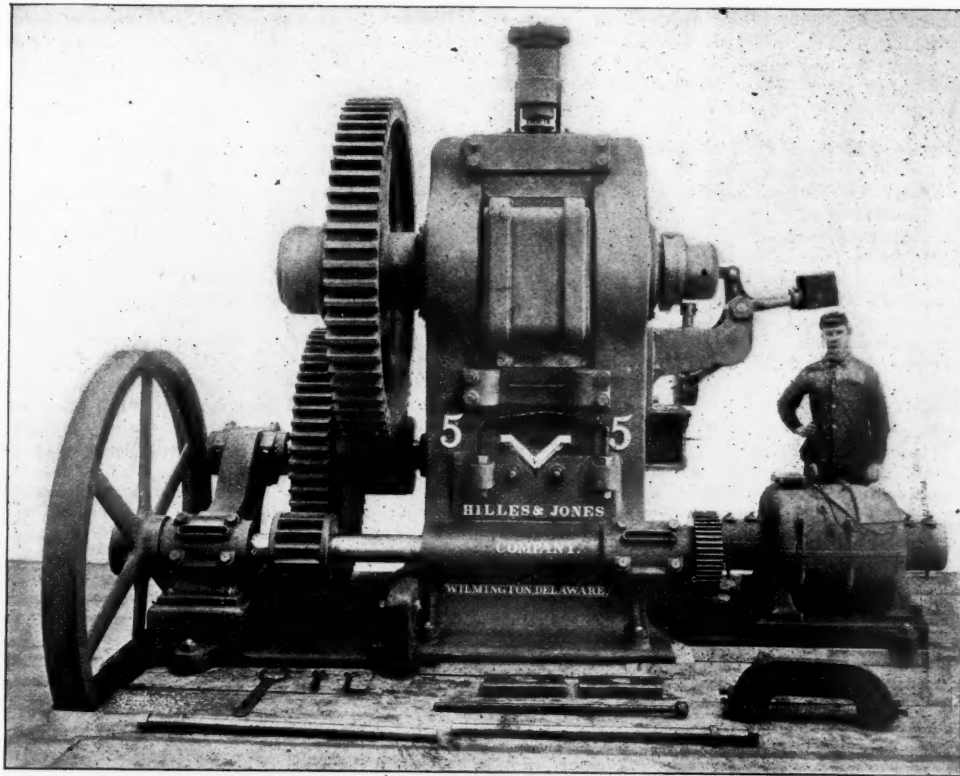
Loading Timber, Etc.—At the request of quite a large mileage Mr. Leeds moved, in accordance with a suggestion of the President, that a special committee be appointed to consider the subject of the loading of long timber and other structural material, and that such committee report at this session.

Mr. WAITT: I fully appreciate the motion that has been made and heartily agree with it, but as to making a report during the present session, I think it is impracticable. It seems to me we can well afford to give a great deal of careful consideration to this question.

Mr. BUSH: The handling of long timber forms such a large part of the business of some railroads that it seems necessary to have something very soon which will be a decided improvement over the present M. C. B. rules governing that question. We could adopt a code of rules for the ensuing year which would be a great improvement over the present rules and which the association would be perfectly safe in adopting for a year. At the same time the whole matter could be laid open to investigation this year, to report upon a permanent set of rules for the next convention.

Mr. LEEDS: We ask for this only as recommended practice.

Mr. DAY: I am particularly interested in the matter of loading lumber and all things pertaining to that part of the business. We have a great deal of that freight down South, and we are very much put about at times as to how to get our freight through, and we are very desirous that this thing should be fixed as soon as possible. If the committee will get together and see what they can do it would be a good thing.



Heavy Bar Shear, Electrically Driven.

end he recommends that each road be required to pay a fee of \$10 for each case submitted, this fee to be turned in to the funds of the M. C. B. Association.

He spoke of the matter of loading logs, poles and bark, which is not to be reported on this year by the Committee on Standards. The rules at present are not sufficiently full or explicit on these matters and they should provide further for the loading of stone and rails. Mr. Lentz suggests the appointment of a committee to investigate this subject. He recommends also that the subject of injury caused by salt-water dripping be made a subject for the report of a special committee.

The President made special mention of the remarkable progress of the railroad clubs. In March, 1896, the membership of the existing clubs amounted to 2,704, the increase during the year having been 639 members. In April still another club, the seventh, was organized at St. Louis and has a membership of 700. The increase in membership during the year, including this new club, was over 60 per cent., and these clubs have become valuable to the association and to the railroads of the country.

The President's address was followed by the reports of the Secretary and Treasurer. The Secretary's report shows a present membership of 338, the net increase for the year having been 16. The number of cars represented now is 1,209,291, an increase of 57,334. The Secretary's disbursements for the year amounted to about \$7,450. The Treasurer reported \$5,510 as the amount of cash on hand.

The following committees were appointed:

Nominating Committee: R. H. Blackall, William McWood, John Hodge, W. H. Harrison, J. H. Rankin.

The SECRETARY: The President desires me to say that this matter was before the Executive Committee yesterday for consideration, and certain papers were submitted. They show that the matter has been pretty thoroughly sifted by certain members of railroad clubs, and by members of this Association, and that it is in a pretty fair shape to put in form for submission to this convention.

The motion of Mr. Leeds was adopted, and the President appointed the following special committee: Pulaski Leeds, S. P. Bush, W. H. Lewis, W. H. Day, F. H. Stark, B. Haskell, Charles Collier.

The Secretary read a communication from Mr. S. Berg, Assistant Chief Engineer of the Lehigh Valley Railroad, concerning timber tests, and recommended that Congress be petitioned to appropriate money to carry out the Government tests. On motion of Mr. Rhodes, this was adopted as the sense of the meeting.

The President appointed as Committee to prepare resolutions on the death of Samuel Irwin, Messrs. T. Reardon, M. M. Martin and John Player.

Mr. RHODES, for the Committee on Triple Valve Tests, reported that no triple valves had been submitted to the committee for tests.

Mr. BARR, reporting for the Committee on Standard Wheel and Track Gages, said that there had been a series of experiments proposed by the American Railway Association, and he had received advices that they were to be made at a certain point, and that was all he knew on the subject. He had no report as to whether the tests had been made.

NOON-HOUR DISCUSSION.

The meeting proceeded to the consideration of the

noon-hour topics, and Mr. Waitt reported for the committee on subjects, that, in addition to those already announced, they recommended the consideration at the noon hour on Thursday of the subject of the "Metric System," in connection with weights and measures in shop work.

Tests for Air-Brake Hose.—The first subject was—"Tests for air hose. Is it possible to approximate a service test in a short time, and to get an idea of the relative durability and value of different makes?"

Mr. BARR: Three or four years ago we undertook some experiments on this subject, and we hit on the scheme of having a moving cross-head and fastening the hose to it under pressure, one end fixed and the other end attached to this moving cross-head, so that the hose received a considerable distortion; the strain on the hose was not of the character of vibration, or anything of that kind, but simply a considerable distortion. The results of this test showed that hose would stand that distortion, different makes, running from about 200 hours to 2,800 hours, showing a very material difference in their capacity to resist strains of that kind. Now, it is a question in my mind whether that is a complete test; but it developed the fact that hose makers, in order to have their hose resist a pressure of 600 or 700 lbs., were making them so stiff and hard that they could not resist the distortion, and the result of that was that we have been endeavoring to get more pliable hose. We have under test now a hose made with lighter or more pliable canvas which seems to stand distortion very well. It will not, however, stand over 300 lbs. pneumatic pressure. However, I think if the hose will resist five times the pressure to which it is subjected in practice, it will give you a safety limit that will meet every practical condition. We have a train running now with this ordinary cotton-covered hose. I do not know what it will stand, it has been running for about three months, but I should not be surprised if with that cheap cotton-covered hose we are going to get as good results as you are getting from what is considered the best hose.

The distortion on the machine was carried to such an extent that it came with some hose to the kinking point; we tried to get as near to that as possible. The failure of the hose is almost invariably at the nipple, where the distortion in all probability is the greatest. The results show that the inch hose of the same make stood two to three times the amount of continued distortion that the inch and a quarter hose did, and that, in connection with other points, induced me to think that durability is what the makers are after, and what we want to secure is flexibility, and we should disregard the idea that we want a hose that will resist a pressure of 600 or 700 lbs.

Mr. POTTER: Would that be the case if the hose was allowed to hang down instead of being put into the coupler? The stiffer hose would vibrate less, and in consequence would not crack near the nipple so quickly as would be the case with a more flexible hose.

Mr. BARR: I cannot answer that question definitely. I will say, however, that we have been keeping a careful record of where the hose fails, and while the kink seems to be more severe at the middle of the hose than anywhere else, the failures from kinking, etc., are four to one in favor of a location at the end of the permanent fastening. I am inclined to think that the stretching from the permanent fastening on the car, and the distortion which is concentrated at that point, is what causes the failure of the hose.

Pressed Steel and Diamond Trucks.—The second topic for discussion was then taken up, "What are the comparative advantages and disadvantages in pressed steel and diamond types of trucks?" This topic was introduced by

S. HIGGINS, who said: I first desire to call your attention to the fact that at the present time there are about 90,000 pressed steel trucks in service in this country, under freight and coal cars, and in almost every instance these trucks are under cars whose capacity is 60,000 lbs. The advantages as compared with the diamond truck are: Decreased weight; fewer parts; less liability of getting out of square; better riding cars, due to the boxes being movable in the jaws; location of springs is such that as much of the truck as possible is above the springs, which tends to prolong the life of all parts attached to the truck.

The decreased weight varies in proportion to the weight of the truck heretofore used under cars of the same capacity, this variation extending from a saving of 2,000 lbs. per car on some roads, to other roads where the weight of the diamond truck is the same as the pressed steel, but in the latter case I think it will usually be found that the diamond truck is altogether too light for the service.

As to the cost of repairs, I desire to say that on one road having several thousand cars mounted on pressed steel trucks, a record was kept for twelve months, and at the end of that time it was found that where \$1 had been spent in repairs of the pressed steel truck, \$10 had been spent in repairs to diamond trucks, the conditions of service being the same except that the diamond trucks had been running three years, and the pressed steel trucks one year.

As to the trains pulling easier when cars are mounted on the pressed steel truck, the Vice-President of one of the largest roads in this country recently told me that on his road they found it made a difference of two cars per train. The fact that the cars mounted on the pressed steel trucks ride better, has been demonstrated over and

over again in a very practical manner, by the way the trainmen will pick out the cars having the pressed steel trucks on which to ride when they are not in the caboose.

The advantages that might be claimed for the diamond truck are: Decreased first cost; easier to repair after being in a wreck or derailed; easier to inspect the outer face of wheels which are not covered up so much as with the pressed steel truck; easier to change wheels.

I have found after a careful record, that the saving in repairs due to the use of the pressed steel truck represents about 4 per cent. upon the increased cost of the pressed steel truck, and this is based upon the cost of a diamond truck, which is not so expensive as diamond trucks now in use on many lines.

In regard to it being easier to repair the diamond truck after it has been in a wreck, my experience has been that the pressed steel trucks behave better at that time than the diamond trucks. In fact, I have known of cases where loaded cars mounted on pressed steel trucks and on diamond trucks have been derailed, and while the cars mounted on the former were able to be sent through to destination after cars were re-railed, cars mounted on the latter had to have the lading transferred and cars were then sent to the shop to have the trucks repaired.

It may be easier to change the wheels with the diamond truck, but I doubt very much if that is the case when we take into consideration how often it occurs that the box bolts of the diamond truck are very badly rusted in the holes, and the labor required to drive out these bolts before the boxes can be removed. On the other hand my experience has been that with the pressed steel trucks the number of wheels to be changed is greatly reduced on account of not having so many wheels with sharp flanges, cut journals, etc., and the car-shop foremen of the Lehigh Valley claims that if there is any extra labor connected with the changing of the wheels under pressed steel trucks, it is so small as to be not worthy of notice.

The length of time that the pressed steel truck has been undergoing a practical test in this country, together with the large number now in use, make it quite evident that this truck has passed the experimental stage, and in my opinion it is the truck of the future, especially with cars of greater capacity than we now have, which I believe will be built with metal underframing. The general adoption of the pressed steel truck will also bring about the use of a standard truck much sooner than in any other way, and this is certainly a result very much to be desired.

Mr. SANDERSON: When these pressed steel trucks were first introduced I felt enthusiastic about them. . . . We have tried them on heavy service, and they have not been as successful as a modern well designed diamond truck. I think we ought not to compare the cost of repairs, the flange wear of wheels and other things of that kind in a modern pressed steel truck, with the average results obtained in that line with the diamond truck, especially in view of the failures, defects and accidents which occur in old designs or weak designs of diamond trucks. Our experience shows that a modern well-designed diamond truck without any wood in it at all, except a few packing pieces, can be made of the same weight or less weight than the Fox pressed steel truck, and give better service. They are certainly much easier to put wheels under, and you must remember that the larger portion of the wheels changed in service are not changed in shops, but at interchange tracks and small repair points. It does not pay to haul cars away to points where there are pneumatic hoists and drop pits. It certainly will not pay us at such places to have to turn the trucks over on their backs, to get the wheels out, and in our trucks there is no difficulty whatever about getting out the box bolts, which Mr. Higgins stated were frequently rusted in fast. . . . I am well satisfied with a modern well-designed diamond truck, and prefer it to any pressed steel truck of the present types.

Mr. RHODES: Some people designing full metal trucks do not pay any attention to one of the principal reasons which has led to the introduction of metal trucks, which is the decrease in weight and the decrease in parts.

Break-in-tuos.—The third topic was then taken up: "Break-in-tuos between cars equipped with M. C. B. type of coupler. To what extent do they occur? What are their causes, and how can they be prevented?"

Mr. WAITT: Some six months ago we commenced a careful investigation into these cases of break-in-tuos. Every case that occurred on our line for six months past, either in the yard or on the road, has been reported to the General Superintendent, and from him reports have been sent to me. In the first five months of 1896 we had reported in this way 467 cases of break-in-two of trains. I think it will be found that this is not an exception to the experience on other roads if you will go into it carefully in detail. Of this number 45 per cent. occurred between cars that were coupled up with the link and pin caused by the coupling pin breaking, or working out, or the link breaking. Of the balance 26½ per cent. occurred from the knuckle in the M. C. B. coupler opening in some way. Twenty-one per cent. occurred on account of the drawbars pulling out, on account of the spindle breaking, or drawbar key breaking, or the key dropping out. The balance were due to miscellaneous causes. Ninety-two per cent. are covered by the three causes stated.

There being such a large number of cases on account of the knuckles opening, 26½ per cent., we tried to ascertain the cause. The large majority seemed to be on

account of improper adjustment or attachment of the uncoupler arrangements, coming in most cases from the chain connection between the uncoupling lever and the lock or pin being so short that with compression of the draft spring, caused either by buffing or general pulling strains, the chain is tautened and the lock is lifted enough so that the uncoupling takes place.

Mr. DAY: Before we commenced to use the new style of lock bolt in the Janney—we use the Janney altogether—we had very little trouble from break-in-tuos, but since we commenced to equip the cars with the new style of lock pin (the large, plain pin) we have had considerable trouble. I had concluded possibly it was caused from the fact of moving the wall inside of the opening, so as to give the tongue more play. We had the matter watched carefully, and the men reported that from the velocity of the train, and sometimes from some little depression of the track, they would see the pin jump off; and the intense buffing that we have to contend with since our cars are equipped with the automatic brake tends to throw the pin up.

Mr. SANDERSON: In the tender couplers on the rear of passenger engines we have had a good deal of trouble in the past with the pins jumping out, and were compelled to put coiled springs underneath the bottom of the pins to fasten them down, so that they would not jump out and unlock. It is nothing but a plain gravity pin. I attributed it to the fact that the bearing surfaces are too small, and the pin did not have enough hollow in its place, and at every jar it would jump up.

Mr. F. H. SOULE: Our attention was turned to the cause of break-in-tuos, which had been very extensive, and we found that the M. C. B. coupler equipped with a tail pin is a very dangerous factor in the operation of trains, as the pins have broken in large numbers or the keys have sheered off or dropped out, and we are very much exercised as to the remedy, although it would seem that the only possible remedy is to replace the spindle by a pocket, as our experience with the pocket has been very satisfactory, and few break-in-tuos have occurred where the pocket has broken and allowed the drawbars to pull out.

Mr. LEEDS: Most of our break-in-tuos have occurred from the fact that improper tail-pins have been used in our cars. Our smallest regular size is 2 in., and we find a great number of 1½ and 1¼ in. applied, with keyways cutting them nearly in two.

Mr. BARR: I fully indorse what has been said, that the uncoupling occurs through the jolting of the pin, from creeping of the pin and from shocks in the longitudinal direction of the car, when the locking device can uncouple in that way. Comparing the number of M. C. B. couplers we have in use, with the link and pin couplers, the uncoupling is four times as great with the M. C. B. couplers.

Mr. BRIMSON: Our standard, the Tower, has given us no trouble in regard to unlocking, when coupled with itself. In connection with the link and pin we have suffered somewhat from trains parting.

Mr. POTTER: In justice to the Janney people it should be stated that I understood Mr. Day that he had all Janney couplers on his line, and had very little experience with the other couplers, so that his statement should not be considered as detrimental to the Janney coupler.

Mr. BRONNER: We find that 50 per cent. of the cases of uncoupling between two cars where each car was coupled with the M. C. B. coupler are due to unknown causes, that the inspectors were unable to discover; no defect in the coupler or attachments. Fifty per cent. of the cases were due to unknown causes, worn condition of the knuckle and locks, defective condition of the locks, improper adjustment of the uncoupling chain and the catching of the uncoupling chain; also in several cases a short drawbar spring, which permitted the coupler to pull out too far and bring a strain on the uncoupling chain.

Mr. ANDERSON: The trouble will be found in the lifting of the chain, on account of the long links getting crossed. There should be all circular links.

WEDNESDAY AFTERNOON SESSION.

The meeting was called to order by President Lentz at 3 o'clock.

Standards and Practice.—The first business was the report of the Committee on Supervision of Standards and Recommended Practice, which was read by Mr. R. H. Soule. [*Railroad Gazette*, June 15, p. 436.]

Mr. Sanderson moved that the report be read and passed upon by paragraphs, as with the Rules of Interchange, which motion was adopted. The report was read by sections.

Mr. SANDERSON: Where it states "the lid spring may be of any design and may be secured to the lid by any practical method, provided that the designated section is adhered to," in the paragraph relating to journal box and details, I would move to add after the word provided the following, "that it be of suitable design to fit the box and works properly with the standard box." Carried.

Mr. WAITT: In section 10 there have been one or two points unintentionally omitted. In the section relating to the malleable iron truck-level connection it was decided in the committee to have it read, instead of 2 in., "not less than 2 in.," and where it states ¾ and ¼, "not less than ¾," "not less than ¼." It will be noticed on the proposed sheet 9 that the length of the dead and live levers only is given, saying that they must be 30 in. long, divided in the proportions of 6 to 24. Our committee decided to leave all of these dimensions out, as it was

hardly practicable to confine the various designs of trucks to one length and proportion of brake levers, inside end and outside end. . . . It has also been decided to leave off the initials W. I. and M. I., as some of us may wish to use wrought steel in the place of wrought iron for the connecting rods. I move that the words "not less than" be placed before the dimensions referred to; and that the initials W. I. and M. I., for which there is no explanation in connection with the sheet, be omitted. Carried.

Mr. WAITT: I also move that the length of the levers be omitted, and only the general shape of the levers, and size and thickness of the metal be given. Carried.

Mr. SANDERSON: As to No. 11, relating to pedestal, it has occurred to me that the present passenger car standard pedestal is too small for the larger journal and modern practice; and it would be wise for a committee to be appointed, during the coming year to recommend a new passenger car pedestal more suitable for the modern design of passenger car, with the large journal.

Mr. RHODES: I move that a committee be appointed to report to the next meeting a standard pedestal for passenger cars for large journals suitable for modern heavy cars.

Mr. SOULE: Should not the scope of the inquiry be extended so as to include the journal-box. We simply have the design for the large journal box as adapted to the freight truck. It would have to be modified to adapt it to the use of passenger trucks.

Mr. RHODES: With the consent of the meeting, I will include that in my motion. Motion put and carried.

Mr. WAITT: In paragraph 28, in connection with handholds, it says "eliminate all dimensions of grab-irons, except that those on ends and sides of cars should be marked not less than 24 in. long." I move to amend that by adding: "And having not less than 2½ in. space between the grabiron and the body of the car, to which it is fastened." I think we should indicate that they should not be shallow grabirons. Carried.

Mr. HAYWARD: It seems to me there should be a uniform height between the track and the step so that the trainmen would have something they could rely upon. I think we should adopt a recommendation of the height of the step from the top of the rail.

Mr. BUSH: I move that Mr. Hayward's suggestion be referred to the Committee on Standards to report next year a location of steps with the reference to the top of the rail.

Mr. HAYWARD: In paragraph 30 is the length given for the chains between the face of end timber and bearing point of the hook, such that the hose will pull apart when the cars become uncoupled and run on the check chains?

Mr. SOULE: The hose would not be pulled apart as long as the chains hold together, but I would ask Mr. Waitt for further information as he has check chains in general use which correspond pretty closely to this specification.

Mr. WAITT: I do not remember that the hose pulled apart in any case where the train has been pulled by the check chains. I do not think it permits them to go far enough apart to separate the hose.

Mr. SANDERSON: I move, in carrying out the recommendation of the committee that a committee be appointed to act in conjunction with a committee of the Master Mechanical Association to revise the standard air-brake and signal instructions, and also revise the specification for cast iron wheels, and report to the Convention of 1897. Carried.

Mr. WAITT moved to submit the recommendations as revised by a vote by letter ballot.

The President: The next report is on "Automatic Couplers." Mr. Wallis, the Chairman of the committee, has been too much occupied with other matters to make a report, and asks to be relieved from the chairmanship of the committee, although he is willing to serve as a member.

Mounting Wheels.—The report of the committee on "Mounting Wheels" was read by the chairman, Mr. J. N. Barr. [*Railroad Gazette*, June 19, p. 432.]

Mr. BARR: Mr. Marshall of the committee suggests a modification of the 3d paragraph under the instructions for using standard check gage, that instead of reading "If E, and D," it should be changed to read like the preceding paragraph, substituting the proper letters. It would then read "If the projection D is pressed against the flange," etc., that will make the report stand as the committee wants to have it.

Mr. RHODES: It would be better to change the report so that when it is read we would not find it necessary to make an explanation. As it is presented here, it reads, "in using the proposed check gage, if the projections A and B do not enter between the flanges, and the projections C and D rest upon the treads of the wheels, the wheels should be rejected." It might be left in this way, "if the projections A and B do not enter between the flanges so that the projection C and D can rest upon the wheels, the wheels shall be rejected."

Mr. BARR: The Secretary has just made that change.

Mr. SANDERSON: On that reference gage there is one dimension given which I think is in error. It shows 4 ft. 5½ in. for the distances which are known as projection A and B on Fig. 2; should not that be 4 ft. 5¼ in., that is the standard distance I believe.

Mr. BARR: The standard reference gage is correct; it cannot be made any other way; 4 ft. 8½ in. between the gage points, which gives the gage of the wheel fixed by the Association, and allowing these projections 1½ in., we necessarily get 4 ft. 5½ in. There is nothing objec-

tionable in that. In recommending the standard check gage we had to make the gage 4 ft. 8 1/4 in., which is not an M. C. B. standard, but we did not use it for that purpose. We had to do that in order to get the distance from the outside of one flange to the inside of the other 4 ft. 6 1/4 in., which is an M. C. B. dimension. We also had to do it in order to get the distance between the projections A and B, 4 ft. 5 1/4 in., which is another M. C. B. dimension, and which is of use in inspecting wheels. In using the gage, we shoved the projections A and B against the inside of the flange, and then the projections E and F against the outside of the flanges, are in their proper position, so that we had to make a discrepancy there which takes it out of the domain of being a standard dimension gage, and for that reason we recommend this other for a dimension gage, and the one that we propose is the one to be used for every day work. The committee does not recommend any deductions of changes whatever in the dimensions adopted by the Association.

Mr. HAYWARD moved that the report be accepted and submitted to letter ballot. Carried.

The report of the Committee on Metal Underframing for Freight Cars was then read by Mr. R. P. C. Sanderson. [*Railroad Gazette*, June 19, p. 430].

Mr. GIBBS moved that the report be received and the discussion deferred until Friday morning. Carried.

THURSDAY MORNING SESSION.

President Lentz called the meeting to order at 9:15 o'clock. The first business was the reading of a letter from Mr. Wilbur, of the Lehigh Valley Railroad Company, reciting some of the features of the English railroad practice.

Location of Air-Brake Cylinders.—The first report read was on "Location of Air-Brake Cylinders on Freight Cars." Mr. McCarty, of the Committee, read the report. [*See Railroad Gazette*, June 19, p. 433.]

Mr. BUSH: The second paragraph on page 2 reads: "Air-brake cylinders and reservoirs should be placed on cars on a line inside of stake pocket as near center of car as possible." That seems to refer only to flat cars and gondola cars. Does the committee not think a location should be indicated for box and stock cars?

Mr. McCARTY: It was hoped that the chairman of the committee would be present, when it was expected to further discuss that feature of the report. The committee feel that it is not quite explicit, and intended to ask the chairman to incorporate in the report some sketches which we have, which will clearly indicate what is referred to.

As to the location of the cylinders, it is impossible to recommend a fixed dimension, but we give the general idea. It can be within a range of 10 or 20 in., but if it is outside of the rail, the men can reach it in safety and do the work rapidly, without any difficulty. Many lines equip their cars with the brake cylinder practically in the center; and a man in this position is in danger in case the train should move. The amount of this is growing rapidly, and the importance of this location becomes more apparent.

Mr. BUSH: I move that the diagrams explaining the locations of the brake cylinders on all kinds of freight cars be incorporated in the report of the committee; and the reading in paragraph second, page 2, be changed to suit.

Mr. McCARTY: I will read an amendment to take the place of the paragraph, as suggested by Mr. Bush: "Air-brake cylinders and triple valves shall be placed on cars as near the outside line of the body as the construction will permit, as shown and described in the diagrams," which are to be made a part of the report.

Mr. SCHROYER: The point which determines the location of our cylinders, first, is to get uniform and standard lengths of rods and levers. We locate our cylinders near the centers of the cars, in such manner as to get uniform length of long rod connections. The location proposed would never give us that.

Mr. GRIEVES: It seems to me that this is an unfavorable position for an air-brake cylinder. I would object to placing a cylinder as near the outside line of the car as shown in the drawings. We have had some trouble with cylinders located in that way, especially when they get in close places and on yard tracks.

Mr. BUSH: It does not seem to me essential that the committee should specify the details of arranging the brake cylinders for all classes of cars.

Mr. RHODES: The arguments presented by the committee are strong ones. We expect to endorse the committee's recommendation, although it is not our practice at the present time.

The motion of Mr. Bush and the amendment proposed by Mr. McCarty were adopted.

Mr. F. D. ADAMS then addressed the meeting, stating the preliminary steps in the movement to organize the association, and then introduced Mr. John Mulligan, President of the Connecticut River Railroad Co., who had been the chairman of the meeting for organization. Mr. Mulligan spoke briefly on the subject, and expressed his pleasure at seeing the association in such a prosperous condition.

The report of the Arbitration Committee was then presented. Mr. Casanave moved the acceptance of the report, which was carried.

Rules of Interchange.—The consideration of the rules of interchange was then announced to be in order. Mr. Casanave moved that the Secretary simply announce the number of each rule instead of reading the entire rule. Carried.

Rule 3.

Mr. WAITT: I think there should be an addition of a few words in this rule to make it clear and consistent with the balance of the rules. I move that we add seven or eight words in the third paragraph, after the word "responsible" so that the rule will read, "If the car has defects for which owners are not responsible, or improper repairs covered by a repair card, but which do not render it unsafe to run," etc. This phrase will make the rule entirely clear, and show that a defect card may be asked for when a car has improper repairs, or it may be asked for in cases where there are defects for which the owners are not responsible.

Mr. F. H. SOULE: I would inquire of Mr. Waitt as to why he limits the application of defect cards for wrong repairs to cars bearing repair cards? Why not make the application general?

Mr. WAITT: The rules further on will provide for that clearly. The responsibility is clearly outlined further on; this is merely making this section consistent with that.

Mr. LEWIS: The object of the proposed change in the rules is to limit as far as possible the old "bad order" cars. Mr. Waitt's suggestion would open wide the door for controversy between inspectors; and it will result in the same delays which we now experience under the old rules.

Mr. SANDERSON: I would like to see this idea of being consistent applied in other directions. The position of Mr. Waitt is in accordance with the recommendation of the Arbitration Committee, that the repair card should not carry any responsibility with it; but that is not consistent with the rules here presented. We are not supposed to pay a bill unless the repair card is in our hands in advance. The repair card does carry responsibility with it. We should try to reduce the amount of carding and writing to a minimum. If the people are going to be honest enough to acknowledge that they have made wrong repairs, either through inadvertence or necessity, let them say so on the repair card, and if it covers it, that is all anybody wants.

Mr. CASANAVE: It is often impossible for an inspector to tell whether a car has been improperly repaired or not. We had better leave the rules in as simple a form as possible. Let us try this for a year as it is, and at the end of the year we may be able to shape it differently, if difficulties appear to make it necessary. This matter seems to be too small to be the cause of introducing complications in the way of inspection; we ought to make the rules as plain and simple as possible for inspectors.

Mr. WAITT's motion was put and lost.

Rule 5.

The schedule of prices in Rule 5, on motion, was referred to a special committee consisting of Messrs. Rhodes, Potter, McConnell, Hennessy and Grieves, to report at a later session of the meeting.

Rule 6.

Mr. RHODES: These rules have been blocked out largely on account of the success that has followed the new interchange adopted by some roads. There is one important clause that the committee of 21 have omitted in their recommendations, and which Arbitration Committee also omitted. Paragraph 11 of the rules under which these roads have been working, and which has proven so successful, says: "Switching railroads not forming parts of systems, and transfer roads owning less than 500 cars, will not be allowed to render a bill, and will be held responsible for all new defects which may be caused while cars are in their possession." If we do not have some clause of this kind, the switching roads all over the country will be allowed to render bills against the car owners when they break drawbars and knuckles and other parts of cars. Moreover, as they do not sign our rules, when it comes to something which goes against them they will not act under the M. C. B. rules. I would offer this as an addition to Rule 6: "Switching roads will not be allowed to render bills for broken parts, and will be held responsible for all new defects which may be caused while cars are in their possession." Many prominent switching roads are already operating under that clause, and it is not going to work any interference in the movement of our cars. It is a thing which the individual car owners ought to vote for with the balance of the railroad car companies.

Mr. Rhodes' amendment was adopted.

Rule 6.

Mr. BARR: In Section 4 there is an addition to the report which is dangerous—the words "or upon the track of a company not belonging to the association." That means if any road in the association delivers a car to a road not a member, it is responsible for any damage to that car. We do not want to assume responsibility because they do not see fit to join the association. Mr. Barr's motion to strike out these words was carried.

Mr. HIGGINS moved that companies submitting cases to the Arbitration Committee accompany the papers with a fee of ten dollars as suggested in the President's address, but this was not adopted.

The Secretary stated that there were 15 companies operating under the new interchange which were not members of the association.

Mr. WAITT moved that inasmuch as the Arbitration Committee in the application of the new rules will probably meet with some problems they have not provided for, that the committee be authorized to make a rule on any question which may come up and that rule stand as the law of the association during the coming year. Carried.

Mr. CASANAVE: I move that the rules except the item^s of prices referred to the special committee be adopted as amended. Carried.

NOON-HOUR DISCUSSION.

Metric System.—The noon-hour topics were then taken up, the first being the "Metric System of Measurement."

Mr. HIGGINS read at length from pamphlet by Dr. Coleman Sellers.

Mr. SANDERSON: I had the fortune at one time and another to work under the metric system in the early 70's, and thought a good deal of it at first, until I got to work under the 2-ft. rule, and the change was a great blessing to me. Rankin wrote a poem on the 2-ft rule, and it would be very interesting to have some of our newspaper friends hunt it up and print it for us.

Mr. GIBBS: In the matter of weight and measures the change would be of some benefit; but shop men are very little concerned as a rule in the matter.

Mr. HIGGINS moved that the Executive Committee be instructed to prepare a suitable set of resolutions to be forwarded to Congress expressing the sentiment of the Master Car Builders' Association as being against the introduction of the metric system in this country at any time. Carried.

Dead Woods.—The fifth regular topic was: "Should not two iron buffer blocks be used on cars when M. C. B. couplers are applied?"

Mr. BRONNER: Every one dealing with car repairs knows that expenditure and delay due to damaged draft gear are extraordinarily large. In fact it is far the largest item of expense in running repairs, outside of wheels. It is contended by the advocates of the double iron buffer blocks that by their use much of this damage could be prevented. This being granted, it becomes necessary to consider whether there are any disadvantages connected with their use. Do they in any way interfere with any of the functions of the coupler? The large numbers of cars so equipped at the present time would seem to be a sufficient answer to this. My own experience is that with proper adjustment they will permit coupling on any curve where the coupler itself will lock without them. The "man-killing" view of the double iron buffing blocks has always been overdrawn. The extra expense of applying the iron buffer blocks is not over \$5 per car, and if they would save a portion of the repairs due to damaged draft gear, they would certainly save their cost very quickly.

The horn of the M. C. B. coupler was probably designed to transfer the heavy buffing blows from the draft gear to the framework, but a trip through any railroad yard, noting the battered condition of the point where this blow is received, will convince any one that this is a failure. If the construction can be made such that this does not occur, it still subjects the coupler bodies to strains that bring about many failures. In looking over the records for several months I found that at least 30 per cent. of the failures of coupler bodies are from cracks and breakages in the neck and shank.

At present we have no standard iron blocks for use with M. C. B. couplers. There are thousands of cars equipped with the blocks and we should certainly adopt one.

Mr. RHODES: This is a very important matter. Two months ago an order was issued by the C., B. & Q., saying that wherever the M. C. B. bars are used on its cars the iron buffer blocks are to go with it. Many roads do not employ buffer blocks, because they think it is bad practice, and I move that it is the sense of this meeting that wherever M. C. B. bars are used buffer blocks should go with them.

Mr. SANDERSON: Anybody who has watched cars being drilled over a 60-ft. grade in a gravity yard, under all the conditions of service, will become very rapidly converted to the absolute necessity of having dead blocks to take up the shocks.

Mr. MITCHELL: In our 44,000 cars I do not believe we have 2,000 which are not equipped with deadblocks, and a broken M. C. B. coupler is rare with us. In two months we have not accumulated 15 M. C. B. couplers broken back of the head.

Mr. THOMAS: I think it is essential to the protection of the buffer block that it should be constructed so as to relieve the shock over the sills, as well as to take the shock that would otherwise be put on the draft gearing.

Mr. SCHROYER: I have been of the opinion that double buffing blocks should be used in car construction, and have always thought that it was a mistake to make our drawbars and draft rigging stand this violent blows that they must take in yards.

Mr. SMITH: We are now fitting all our tank line cars with vertical hook bars and air-brakes. We are not using deadblocks; others are. If the Association says deadblocks should be used, all the roads would use them. If the deadblocks are to be used, we will put them on. If the association takes no action, we should do as we are now doing—apply bars without the deadblocks; but the association should decide absolutely whether the blocks should be used or not.

The SECRETARY: It has been recommended practice since the year 1893 to use deadblocks with M. C. B. couplers.

Mr. GEEVES: The B. & O. has equipped 5,500 cars already.

Mr. Rhodes' motion was carried.

THURSDAY AFTERNOON SESSION.

The President called the meeting to order at 3:15 p. m. The Nomination Committee presented its report recommending the following officers:

President—S. A. Crone, New York Central.

First Vice-President—E. D. Bronner, Michigan Central.

Second Vice-President—C. A. Schroyer, Chicago & Northwestern.

Third Vice-President—J. T. Chamberlain, Boston & Maine.

Treasurer—G. W. Demarest, Northern Central.

Members of the Executive Committee—G. W. Rhodes, Pulaski Leeds and M. M. Martin.

The question of location of air brake cylinders on freight cars was again taken up. [*Railroad Gazette* June 19, p. 433.]

Mr. RHODES: The committee say that air-brake branch pipe should be connected to top of drain cup in main pipe instead of bottom, in order to avoid, as far as possible, the tendency of dust and dirt to pass through strainer to triple valve. There has been no discussion of that clause and yet it is a matter that is claiming more or less attention and it would seem to me to be well to consider whether it is desirable to make these changes or not. Mr. Rhodes then exhibited a blue print and sample branch pipe, showing methods of removing and cleaning the drain cup.

Mr. McCARTY: The committee did not recommend a drain cup. We only suggested that the branch pipe be connected to the top of the cup. The form of drain that we have given a little thought to, though not incorporated in the report, is one connecting the branch pipe to the top of the cup with an outlet on the bottom which can be opened and the screen removed without disturbing the pipe. If the inspectors and repair men are to clean the drain cup a change will have to be made. It is now practically impossible to do this work in the time allowed. The plan proposed by Mr. Rhodes is one whereby this work can be done quickly and safely.

Mr. CLOUD: I would say in reference to this matter, from the standpoint of the manufacturers, that some time ago their attention was called to the fact that the screen in the so-called drain cup was not as durable as it might be. They thought it would be better to have a more durable screen; a perforated sheet metal screen in the drain cup. The cups for some years past have been made in that way, with a much more durable screen, and we do not know of any failures, unless by maltreatment, or of the necessity of their removal.

The question has been brought to the attention of the manufacturers by several railroads as to the requisite facilities for cleaning these drain cups, but by inquiry from all such parties we have not been able to find a case with the quick action brake where the screen became so much stopped up as to prevent the action of the brake. As a matter of fact, it does not follow, as we understand it, that they need cleaning, but if the holes stop up to a certain extent the rush of the air through the screen in any emergency occasion is such as to keep them scrubbed out enough to permit the air to pass with an application of the brakes. Therefore, it does not seem that there is any particular reason for making a more complicated construction to facilitate the cleaning of the screen, when it is self-cleaning.

In regard to the idea that the drain cup is a receptacle for dirt, since the quick-action brake has been introduced it is not, properly speaking, a receiving drain cup, but a T connection, with a screen in it to screen the air, and prevent large particles of dirt from passing to the triple-valve connection.

As to the recommendations of the committee that the branch pipe connections should be made at the top instead of the bottom, it looks as if there is no good reason for changing the present drain cup. This would involve additional joints and elbows, perhaps, and result in constructive features which would be more objectionable than the advantages derived from such construction. Taking it as a whole, we have regarded that any complication in the construction, any increase in the number of threaded joints or screw joints of any kind, is objectionable, unless there is a very positive advantage to be gained from such increased complication in the construction.

Mr. McCARTY: It is pretty well known that a great many railroads favor the idea of dispensing with the dummy couplings. That will result in an increasing quantity of dirt through the pipe, making it more necessary to have a drain cup that can be readily cleaned than before. However, if the facts are as stated by Mr. Cloud, that the drain cup now in use is more of an ornamental than a useful device, it should be dispensed with and the drainage of the air accomplished at the union where the branch pipe connects the triple valve, where the repair inspectors can readily reach it and ascertain if there is a stoppage and the difficulty may be removed.

Mr. RHODES: When we first took this question up I was in favor of having arrangements made by which we could clean this connection in the main drain pipe, but I got from our Secretary the information he has given this afternoon, and made inquiries from our master mechanics. I found that several of them, since they had had this new perforated screen, were strongly impressed with the ideas advanced by the Secretary, and it had not been developed in the new screens, with their perforations, that it was necessary to clean them. I fear that it might be thought that perhaps the reason we gave our attention to them so particularly was because we had abandoned the dummy couplings; but that was not the case. I tried to get some of the new screens so stopped up with dust and dirt that air would not pass through them. Twenty or thirty were sent to my office—as bad cases as could be found—and there was not one of them but the air would pass through, and as the sluggish

holes got plugged up the more rapid passage of the air seemed to keep them open.

Axle, etc., for 80,000-lb. Cars.—The report of the Committee on "Axle, Journal Box, Bearing and Wedge for Cars of 80,000-lbs. Capacity" was then read by Mr. E. D. Nelson. [Printed elsewhere in this issue.]

Mr. MENDENHALL moved that the report of the committee be accepted. Carried.

Mr. SANDERSON: The committee has not treated the question of hot journals. We hear much about the strength of steel at its dangerous blue temperature; we see journals sometimes red hot, with a mass of 600 lbs. of hot iron next to them, which makes a sharp limitation of the question of heating. With the axle in that condition until the car is stopped, the journal is being strained a great deal worse than under any other conditions.

I move that the specifications be presented to the Committee on Standards and Recommended Practice, for their criticism, and if approved to be forwarded to the Secretary, and be sent out for letter ballot; and that the drawings of the axle, journal box, etc., be submitted to the Committee on Standards to be modified in accordance with the modifications recommended by that committee for the journal boxes, wedges, etc., to make them all uniform, and they be submitted to letter ballot for adoption. This proceeding was declared to be not in order.

Mr. SOULE: I take it these proposed designs are entirely acceptable, and the only thing the Committee on Standards would have to suggest is that the association should agree now to such modifications of them as they have already agreed to regarding the designs for the smaller journal boxes. We have no modification to suggest in the axle itself; but the association, as endorsed the recommendation of the Committee on Standards as regards the following points: First, to omit the illustration of the dust guard as the association has no standard. We advise that a note should be added here that this space should be filled by a suitable dust guard, and similarly some other notes, one of which related to the manner of fastening the hinge pin; still another relating to the spring in the lid; still another, permitting the use of skeleton wedges of malleable iron or cast steel, in place of the solid wedges shown here; another, which involved eliminating the lugs from the sides of the arch-bar seat; and that calls attention to the fact that this committee in submitting the design have omitted the width of the arch-bar seat. I think the dimensions should be stated.

As Mr. Sanderson's motion did not receive a second, I offer, instead, that we agree to the same modification of these designs as we agreed to in the case of the other journal box and contained parts; and such modifications having been made, the whole should go to letter ballot as standard; and that the committee recommend a width from the archbar seat.

Mr. NELSON: It was necessary, in connection with the specifications, to be guided by such information as we had. In specification 7, page 26, it states: "It is desired that axles, when tested under the drop as specified above, should not deflect more than $5\frac{1}{2}$ in. after the first blow, and should stand five blows without rupture or fracture in any way." No. 8 specifies it as $6\frac{1}{2}$. These figures were based upon information which we had at the time the report was written. All in all, the Pennsylvania Railroad has broken under their drop at Altoona for this committee 62 axles, some of which were made specially, and some of which were bought from other companies, all M. C. B. standard. Since coming to the convention I have received information which leads us to recommend that the dimensions be changed to 7 in. in No. 7, and 8 in. No. 8.

Mr. WAITT: I will make a motion as an amendment to that of Mr. Barr. I think it is unwise as a general rule on the report of a committee of this character to submit them to letter ballot as standard, without careful and lengthy consideration and practical experiment, and I would recommend, therefore, that the designs submitted by the committee, together with the specifications, with such modifications as will make them correspond with the modifications made in journal boxes and attached parts in the $4\frac{1}{2} \times 8$ and $3\frac{3}{4} \times 7$ sizes, be submitted to letter ballot for recommended practice, and the matter be referred to the Committee on Standards for further consideration and report next year. Carried.

FRIDAY MORNING SESSION.

President Lentz called the meeting to order at 9.15.

Prices.—Chairman RHODES, of the Committee on Prices in the Interchange Rules, reported that the Committee, in carrying out the wishes of the association, decided to make a few changes from last year's prices as possible, and in some cases where the Arbitration Committee had decided to increase prices, the committee thought it best to put them back to the old prices. The prices recommended by the committee were adopted.

Metal Underframes.—The President announced the discussion on the report of the Committee on Metal Underframing of Freight Cars to be in order.

Mr. BARR: I make a motion that five members be appointed as a committee, each one as an independent committee, to get up a design of steel car frames, each one giving the matter his best attention, and presenting these designs at the next meeting of the association.

Mr. SANDERSON: No standard design could be developed until the association shall be able to set definite dimensions to work to. Everything depends on the

length and the load carried per foot of length. I would recommend that joint action should be taken between the American Railway Association and this association, and possibly some traffic association, so as to try to get united action and adopt lengths and widths of cars for 60,000, 70,000 and 80,000 lbs. capacity.

Mr. BUSH: I second Mr. Barr's motion. I believe his object is to bring out individual effort and ingenuity in this matter of designing cars. The great obstacle in the way at the present time is the cost of steel cars. There is a good deal of preliminary work to be done, and the best way to have it done is by individual effort.

Mr. JOUGHINS: We have had some experience in metal underframes on the Norfolk & Southern Railroad. It is now nearly four years since we made a sample car and that has given very good service, indeed. I am a very enthusiastic advocate of metal underframes; it is not applicable under all conditions, but there are conditions where the steel frame can be used to great advantage. We are forced to the use of it in our climate; our timber cars with exposed frame will not last more than six or seven years. We find that during the $3\frac{1}{2}$ years the car has been in service we have never spent a cent for repairs of the underframe, and we have never found a loose bolt.

Mr. STIRLING: My opinion is that when you have decided, at least approximately, upon the style of car you wish to experiment with in can be supplied to you in steel at a cost somewhat on this basis: Take a 60,000-lb. wooden car, I estimate at $\frac{1}{3}$, or $\frac{1}{4}$ of a cent per pound of carrying capacity, and an 80,000-lb. steel car, at $\frac{1}{3}$ of a cent per pound of carrying capacity, the additional expense per pound of carrying capacity being a mere bagatelle with the durability, the saving of axles, wheels, springs, oiling and everything concerned.

Mr. Barr's motion was put and carried, and the President stated that the Executive Committee would name the committee of five in accordance therewith.

Metal for Brakeshoes.—The report of the Committee on Metal for Brakeshoes, Laboratory Tests, was then read by Mr. Bush. The Secretary read the report of the Committee on Road Tests.

The joint report on laboratory tests and road tests of brake shoes, combined the results of the two series of tests and concluded substantially as follows:

That for the prevailing conditions which surround the use of chilled cast-iron wheels in freight service, the shoes which would be found most economical and efficient would probably be the wrought iron, the Congdon, soft cast iron and hard cast iron.

For use on chilled cast-iron wheels under the conditions which usually prevail in passenger service, wrought iron or pressed steel, the Meehan, soft cast iron and the hard cast iron.

For use on steel-tired wheels under the conditions which prevail in passenger service it was difficult to name any one of the several trial metals as certain to produce good results, owing to the fact that there are wide variations of friction as developed and a very wide range of effect on the tire itself, the result being that cast iron is the only material which can be relied on to give uniformly satisfactory results, both as regards friction, the wear of the brakeshoe itself and the effect of the brakeshoe on the steel tire.

Mr. SANDERSON: This report and the work this committee has done is one of the classics in the science of railroading, and it will be of the greatest value to railroad mechanical officers and mechanical engineers throughout the United States. The committee deserve the sincerest thanks of the association and American engineers for their work. This ought to be made a standing committee. They have mentioned that fresh brakeshoes have been brought to their attention. Others will come up, and we will be asked to give them a trial. We ought to be able to say that they must be referred to the standing committee on brake-shoe tests, and if the committee reports favorably, we will consider their use. The machinery and appliances require the care of someone to look after them. Their use requires skill and experience to get results, and I make a motion that the committee be made a standing committee.

Mr. BARR: An important difficulty is that the flanges of cast-iron wheels are not all of the same thickness. I do not believe it is practicable to use a flange shoe on cast-iron wheels, on account of the tendency to catch on any irregularity of the flange and destroy the wheel.

Mr. DAY: Mr. Barr mentions his experience as to the use of the flange shoe on cast iron wheels; has anybody had any experience with flange shoes on steel-tired wheels?

Mr. MITCHELL: All our passenger equipment has steel-tired wheels, on which we use the flange shoe, soft charcoal iron. We use that for the special object of keeping a proper contour on the wheel. We use a Ross shoe, which grinds down the flange on the outside of the tread, but the shoe does not bear where the rail wears. We are getting most excellent results.

Mr. Sanderson's motion was adopted.

Passenger Car Ends, &c.—The report of the Committee on Passenger Car Ends and Platforms was read by Mr. Grieves.

Mr. MITCHELL: This drawing seems to be an advertisement of the Gould platform arrangement.

Mr. GRIEVES: There is a combination there of the Gould, Buckeye and Bissell platforms. We tried to avoid advertising anybody's platform.

Mr. WAITT: We have 150 cars equipped with iron underframe similar to this, except that we do not use in any case the angle irons. We use heavy plain plates

with the ends twisted so that they can be bolted directly to the sill or iron plate going across the end sill, and the iron plate going across the end sill at the top. We found it simple and satisfactory, and I believe stronger in the end than by the use of angle irons. We use possibly a little heavier construction than would be used with the angle irons. These cars have never been in a wreck, and we have not had an opportunity of determining how much they would stand; but I think even the locomotive would suffer somewhat in breaking through them. Report accepted.

Freight-Car Doors.—The report of the Committee on Freight-Car Doors and Attachments was then read by Mr. F. H. Soule. [*Railroad Gazette*, June 19, p. 431.]

Mr. WAITT: The report of the committee is one of general information. They make no specific recommendations; it is hardly to be expected that they would. These three doors, brought to their attention since the report was printed, could very wisely be illustrated in connection with the report; and I move that they be included in the report when it is sent to the members. Carried.

Mr. SANDERSON: It seems to me that the committee has overlooked some of the recent work that has been done. The committee should be continued for another year, with instructions different from what they had this year, so that they can make a recommendation to the association for recommended practice of a standard freight-car door.

Mr. RHODES: When cars are let by contract, we are usually met with a charge of so much extra for a certain kind of door, and they are expensive to maintain. We looked into the matter and found that the doors on which you do not have to pay anything extra were by far the most durable. Mr. Sanderson's motion is a good one.

Mr. WAITT: If the committee were asked to present such doors that would meet what we consider proper requirements, they could do it; but if we ask them to design a door that does not conflict with patents, it would be hard work. I move that the committee be appointed on this subject be instructed to confer with the Freight Claim Agents' Association on the subject of sealing freight-car doors. Carried.

On motion, the subject was referred to the Committee on Subjects.

Handholds, Etc.—The report of the Committee on Handholds and Height of Drawbars was then read by Mr. Hayward. [*Railroad Gazette*, June 19, p. 433.]

The PRESIDENT: The discussion of this report will have to go over until our next session, as 12 o'clock has arrived, the time for taking up the topical subjects.

NOON-HOUR TOPICS.

Approved Brakes.—On motion, subject No. 13 was first taken up: "Will a railroad company be conforming to the law requiring power brakes on freight trains regardless of whether its power brakes meet the specifications adopted by the M. C. B. Association?"

Mr. MITCHELL: A brake on a car that does not fulfill the M. C. B. requirements cannot be considered as a proper brake. It is worse than useless, doing more harm than good. It seems necessary that all new triples, before they are sold to railroad companies, should be tested by the standing committee, and the committee pass on the triples and see that they are proper for the railroad companies to use; after which, I should consider that the power brakes would probably meet the specifications adopted by this Association, and should be considered as complying with the law. Cars equipped with brakes whose triples do not meet the requirements of this Association should not be considered as complying with the law.

Mr. RHODES: It is important for us to know whether triples, which are being introduced on the roads now, and which have not passed the M. C. B. test—and it may be doubtful whether they will—whether we are warranted in saying that they meet the requirements of the committee on safety appliances.

Mr. MITCHELL: I move that it is the sense of this meeting that brakes whose triple valves have not had the approval of the M. C. B. committee on triples shall not be considered as proper brakes for use on railroad equipment. Carried.

On motion, the time for the consideration of the subjects was reduced to five minutes.

Care of Brake Hose.—Topic No. 6 was then considered: "Can some more economical method be practiced in connection with air-brake hose? It is claimed that damaged hose can often be spliced, and that punctured hose can be filled and patched in the same way that rubber hose for other purposes is repaired."

Mr. RHODES: On the C., B. & Q. for the year ending September, 1894, to our great surprise we discovered on an equipment of 7,000 cars it had cost us \$12,000 for renewing hose. One reason for that was that we had a very rigid rule on our road, requiring all hose to be hung in the dummy coupling. They were secured on the end sill of the car. You could not put the hose into the dummy without making a bad kink. I am a bicycle rider, and the thought came to me of the care the bicycle men take of their hose and the care we took with our hose. If a bicycle man runs a tack into his tire, he never thinks of throwing it away; but he has it repaired. If a railroad company's hose is damaged, the first thing we do is to throw it away. The reverse ought to be the case. The bicycle tire is always rubbing and wearing, dragging over the cinders, whereas the railroad hose, if properly put up, ought to have no outside work at all, and ought to be subject to this inside pressure, which

does not amount to much more than 70 lbs.; while the bicycle pressure is 150 lbs. or more. I thought why cannot we take some of this good hose, only been in six months, which is damaged at the nipple. There is a hose spliced for 7½ cents; had we thrown it away, as was our practice three months ago, the hose alone would have cost 70 cents. Here is a hose which is bound and spliced, which had some shot holes in it, was filled in the same way you plug a bicycle for about 5 or 10 cents.

Tail Bolts or Yokes.—Subject 7 was next in order: "Tail bolt fastenings for drawbars. Should not the practice of using them be condemned, and the yoke fastening be advocated in its place?"

The subject was introduced by J. J. HENNESSY, who said: It seems to me that the practice of using the tail-bolt or stem fastening for drawbars should be condemned, and the yoke or pocket attachment be advocated in its place. During the years of 1894-5 the C. M. & St. P. R. R. Co.'s total freight car equipment amounted to 27,880 cars. About 95 per cent. of these cars were equipped with the yoke or pocket attachment, while the other 5 per cent. were equipped with the tail-bolt or stem attachment. During the two years of the 95 per cent of the cars equipped with the pocket attachment, 14 pockets failed, causing damage amounting to \$871. During the same period of the 5 per cent. of the cars equipped with the stem or tail-bolt attachment, 17 stems failed, causing damage amounting to \$2,300. If other railroad companies have had the same experience with the tail-bolt or stem attachment that the C., M. & St. P. R. R. Co. has had, it seems to me that the M. C. B. Association should make every effort as soon as possible to discontinue the use of same, and adopt in its stead the yoke or pocket attachment. I will add that I have received a communication from Mr. G. W. Rhodes, Supt. Motive Power of the C., B. & Q. R. R., stating that the road recently had a wreck caused by the failure of the tail-bolt attachments, resulting in damage to the amount of \$995.

Mr. WAITT: I stated yesterday that in 467 broken bars 21 per cent. occurred through failure in the tail bolts; only one in the 467 failed on account of anything in connection with the pocket. The pocket did not break; a poor rivet gave way.

Mr. MITCHELL: I move that it is the sense of the association that tail bolts should be abolished in all future construction. Carried.

Journal Bearings.—Topic No. 9 was: "Solid lead-lined journal bearings versus filled shell bearings on freight cars. Which is the best practice?"

Mr. CHASE: It has been our experience that with the solid brass journals with the lead lining we get the cars over the road a good deal better than we do in cases where we have the journals get hot with the shell brass filled journals, on account of the filling melting out when the journal becomes hot enough, with nothing but the shell left, which bear on the journal in such a small place that the journals get hot in a short time. It is the safest, the most economical and the best brass there is.

Mr. WAITT: We recently had some cars built with steel axles. They did not turn the journals as smoothly as they ought to be and in several cases we had hot boxes after the cars got off our line. The journals were not cut, but they heated badly, so that it was necessary to apply a new brass on account of the amount of heat that had been produced in the bearing. Instead of solid lead-lined bearings they applied shell bearings. The result was that the roughness of the steel being there the lining very soon melted out of the filled bearings, the journals were very badly cut; the shell bearings heated and broke in two, and we had a generally dilapidated condition of affairs, which did not happen when the solid bearings were used. That was repetition of quite an expensive experience, causing us to change from the shell bearings and go to the solid bearings.

Mr. BARR: I think that the experience of the St. Paul road is in favor of filled bearings. Mr. Waitt's objection is perfectly valid, but the trouble there is more with the shape of the shell than the principle of the shell itself. The shell of the bearings should be so constructed that if the soft metal is removed the shell will have full bearing on the journal.

Mr. HIGGINS: No road has had more experience with the shell bearing than the Lehigh Valley. It was adopted some years ago, after a test, and it was found that so long as the journal ran cool the bearings gave good results. We are now using the lead-lined bearing, and we find that with the bearing properly bored out before the lining is applied, the brass will run for a long time; that is, the old brass, after the lining is gone. Our experience has demonstrated that the solid bearing is much better than the shell bearing.

Replacing Triple Valves.—Topic No. 10 was then considered: "Under the rules of interchange is a railroad company warranted in the removal of a dirty Westinghouse triple from an air-brake car and applying a clean Boyden triple or a New York triple?"

Mr. RHODES: A few years ago we purchased some 1,500 New York triples, and unfortunately had our cars partly equipped with them before we had any right to use them. We removed them, and after this was done, we found some of them still in use on our cars. Evidently, some of our friends had bought the triples, and as they knew we had bought a large number, they thought we would like some more. The question involved in this topic is, whether it is treating your neighbor properly?

Mr. MITCHELL: I do not believe in changing triples on freight cars. If a company decides they want an air-brake on their freight equipment, and have made in-

vestigations, and decided upon what they think is the best, the interchanging companies should adhere to their wishes and furnish only the triple which was originally applied to the car.

Mr. WAITT: I move that it is the sense of the meeting that the substitution of one make of triple valve for another is not proper repairs.

[Other topical discussion will be reported in a later issue.]

FRIDAY AFTERNOON SESSION.

Meeting called to order 3.15. Vice-President Crone in the chair.

The report on handholds and height of drawbars was taken up for consideration. (This discussion will be reported later.)

On motion of Mr. Rhodes the following was adopted:

It is the sense of this meeting that in settling for destroyed freight cars with insurance companies, a salvage allowance at the same prices named for old materials under the rules is correct, provided that the values of the cars as given in the rules is also used in figuring the depreciation.

Uncoupling Gear.—Mr. POTTER read the report of the Committee on Uncoupling Arrangements for the M. C. B. automatic couplers.

Mr. WAITT: In looking over these sketches of different styles of couplers and the uncoupling attachments, it seems to me as if it were possible, and rather a simple matter to arrange, for 14 out of the 16 to use a uniform length and size of uncoupling lever, including the arm. There is only one difficulty that would have to be taken care of, and that would be where some connect with the uncoupling attachment directly over the center, as compared with those that connect with the uncoupling attachment at the side. The only difference would be in locating the uniform lever one or two inches nearer or further from the center toward the side. Eighty per cent. of them, as shown, can be operated with one uniform shape and size of uncoupling lever. I move that the committee be requested to consider the matter further, with a view of presenting an uncoupling lever and attachments which will provide for the largest number of couplers possible. Carried.

Mr. BARR: I would like to see the committee instructed to take up the question of the length of chain. It has developed into an important point in its bearing on the uncoupling of trains in transit. There are other points involved, and I move that this committee take up all points in connecting with the uncoupling arrangement. Carried.

The report of the Committee on Stenciling of Cars was read by Mr. Wait. [*Railroad Gazette*, June 19, p. 432.]

Mr. BARR moved that the recommendations be submitted to letter ballot, and the report received and placed on file. Carried.

Mr. NELSON moved that a committee be appointed to recommend the standard markings for freight cars, incorporating the recommendations of this committee. Carried.

The Committee on Subjects reported the following for the Convention of 1897:

1. Further consideration and suggestion of rules for loading logs, poles, bark, long iron, bridge material, etc.
2. Break-in-tows; causes and effect and to suggest a remedy.
3. Present a design for a passenger-car pedestal and oil box, for 4½ × 8-in. journal.
4. Revise specifications and guarantee for cast-iron, wheels, including a consideration of the form of wheel.
5. In conjunction with a committee from the Master Mechanics' Association to revise the Code of Rules pertaining to air-brakes and signal instructions.
6. To follow up and report on improved buffers for freight cars.
7. To submit designs of side and end doors for box cars, including fixtures for adoption.
8. To recommend section of archbars and archbar bolts for cars of 60,000 lbs. capacity, and submit design for archbars and archbar bolts for cars of 80,000 lbs. capacity.
9. Consider the subject of trucks, springs, and what can be done in the way of standardizing them for cars of various capacity.
10. To advise what changes may be necessary in the standard size of M. C. B. automatic coupler shank, and recommend standard yoke or pocket strap for rear end attachments.

The report of the committee was accompanied with this resolution: *Resolved*, That the Master Car Painters' Association be requested to investigate the subject of protective paints for metal framing of car bodies and trucks.

Mr. WAITT moved that the resolution be adopted, and the Secretary be instructed to notify the Car Painters' Association of the request. Carried.

Mr. LEEDS, as chairman of the special committee appointed on the day of the first session, on the subject of loading poles, rails, etc., on cars, presented the rules in use on the Pennsylvania Railroad covering the subject, which were not read.

Mr. SCHROYER moved their submission to letter ballot for recommended practice, without reading. Carried.

Mr. MITCHELL moved that the Association return to its former method of beginning the meetings on Tuesday. Carried.

Nominations for the next place of meeting were then heard. Chicago, Old Point Comfort, Denver, Niagara Falls, Montreal and Colorado Springs were named.

The election of officers being next in order, Mr. GRIEVOUS moved that the Secretary cast the ballot of the Association for the gentlemen named by the Nominating Committee. The Secretary cast the ballot and they were declared duly elected.

(Continued on Page 456.)



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EDITORIAL ANNOUNCEMENTS.

Contributions.—Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies in their management, particulars as to the business of the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and railroads, and suggestions as to its improvement. Discussions of subjects pertaining to ALL DEPARTMENTS of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.

Advertisements.—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns OUR OWN opinions, and those only, and in our news columns present only such matter as we consider interesting, and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers, can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.

A resolution was passed at the Master Car Builders' Convention which will probably have important results and which is liable to escape the notice of the reader, as it occupies but little space in the long report of the proceedings. We venture, therefore, to call especial attention to it. It was to the effect that triple valves that have not been approved by the Master Car Builders' Association Committee on Triple Valves shall not be considered as proper equipment. Such a resolution would probably have little direct effect on the minds of those who think that almost any valve is good enough provided it is cheap enough, or who think that they are quite qualified to select a triple valve without the assistance of the Association. It will have, however, an important indirect effect. It will add to the difficulties of any railroad company using a valve not approved, if that company is brought into court in case of an accident. The approval of the Master Car Builders' Association is strong presumptive evidence that apparatus is up to the best standard of modern practice; lack of such approval is presumptive evidence to the contrary. We take it, therefore, that the effect of this resolution will be to make railroad officers careful how they go hunting around for strange triple valves.

The question whether it is legitimate to carry freight cars on floats from Peshtigo, Wis., to South Chicago is discussed in an editorial in the *Timberman* of last week and the "car ferry" is ably defended. The only excuse for writing the article, however, seems to have been a man of straw in the shape of an editorial in the *Railway Review*, which tried to show that it is all right to carry cars on boats across a lake, but not to carry them lengthwise of it. The *Railway Review* philosophizes on the perplexities introduced into the field of rate discussions by the establishment of the "car ferry," and says that if the water line is recognized the act "will throw open the door for all sorts of absurd demands. . . . Stable transportation charges are necessary for the safe conduct of commercial enterprises, and anything tending to instability is an offence against the public." There is also some reference to the claim that lack of regularity detracts from the value of the water line and makes it unnecessary or wrong for the all-rail lines from Chicago to St. Paul to recognize the ferry as an important commercial fact. The *Timberman* very sensibly replies that the ferry is an experiment (which may account for present imperfections); that judging from past experience quick and regular service can be guaranteed, and that this, if done at lower rates than the railroads ask, is what the public wants. If the ferry can be defeated only by combinations among the railroads or by hostile legislation, the sympathies of the public will be with the ferry. It might have been added that the sympathies of the public would be with the boat line anyway, without regard to whether the railroads do or do not combine. Most people sympathize with the line giving the lowest rates, whatever the qualifying circumstances, and perhaps the Lake Michigan line can continue indefinitely giving lower rates than the rail-

roads can afford. We say "perhaps," for we do not suppose that any one knows yet what the cost of the long ferry will be. Even those who realize that stability is important and who are in favor of the abstract proposition to forbid every disturbance tending to make rates unstable, very soon throw aside their principles when a fluctuation throws benefits their way. But the trouble is that there is a good deal of business for water lines at unstable rates. Great wrong has been done by unstable rates on land—that is, by secret arrangements to give discounts from published rates, and even by lawful manipulations, about which there was not much secrecy; but, on the water, rates have been unstable from time immemorial, and yet the safety of commercial enterprises seems to have suffered no irreparable shock. The car-float line probably cannot carry grain and lumber in competition with vessels carrying those commodities in bulk in the ordinary way, but it may be that it is a very economical method of transportation, nevertheless; and its "absurd demands" will probably be with us for some time to come. If the door is not opened quite likely it will knock the harder on the outside; or, perhaps, will kick up the turf on the lawn.

Mr. Mozier, Superintendent of Transportation of the Erie Railroad at Cleveland, has devised and lately put in use a train-order signal, in connection with which there is an apparatus like a mail-bag "catcher" for delivering train orders to engineers and conductors without requiring them to slacken their speed. On the Ohio lines of the Erie "19" orders, those which do not require the signature of the engineer or conductor, are delivered to trains of inferior right without stopping them, and this apparatus has been got up so as to avoid the necessity of slackening speed. The signal is a semaphore, similar to Mr. Mozier's three-position semaphore, described in the *Railroad Gazette* of April 5, 1895, and the train order for the engineer, enclosed in a waterproof envelope, is placed in a sack suspended between two projecting arms. Another sack, with the order for the conductor, is similarly suspended above the first one. As the train approaches, the signal blade stands in a horizontal position, indicating to the engineer that there is a train order for him; but if the regular block signal indicates all clear he does not stop, simply taking the sack off the signal by extending his hand as he approaches the post. This has been done at a speed of 40 miles an hour, and those who made the experiment are satisfied that it could be done at a much higher speed. As soon as the engineer withdraws his sack the conductor's drops into the position vacated by the former, and the arm changes to a diagonal position. When the conductor takes off his sack the signal changes to the vertical, or all-clear position, and the engineer, by looking back, can thus assure himself that the conductor has taken his copy of the order. The sacks are held by an elastic cord and they yield readily when grasped by the hand. A bull's eye in the side of the signal lamp throws light upon the sack at night so that it can be readily seen. No catching apparatus has been attached to engines or cabooses, that being deemed unnecessary. This method of dealing with train orders can of course be adopted with a high degree of confidence where a block system is used, as on the Erie. Many "19" orders might be safely delivered even without a block system, but with it there is theoretically no danger in delivering orders in this way to ruling trains as well as to inferior. With a perfect block system, it has been proposed by Mr. Goodnow, of the Chicago, Milwaukee & St. Paul, as our readers will remember, to deliver all train orders without even repeating them. If one is not willing to take this radical position, there is still room for improvement where all orders are sent on Form 31, for the use of Form 19 will often obviate considerable loss of time. Mr. H. B. Ware, of the Burlington & Missouri River, in a paper read at the recent convention of Train Dispatchers, told of a case where a stock train traveling 1,000 miles made six hours' better time than a similar train on a competing line, the first mentioned being on a road using both "19" and "31" orders, while the other used only Form 31. There was no unusual delay and Mr. Ware believes that a good part of the six hours' saving was due to the fact that the first mentioned train did not have to stop every few miles for train orders. Mr. Ware regards the sending of a copy of a train order to the operator at the meeting point as a valuable safeguard, so good a one, in fact, as to make the "19" order safe and valuable in many places where it is not now used.

The Tramps and the Railroads.

We have not attempted to collect statistics of tramps and shall not even guess whether their numbers are increasing or decreasing; for practical purposes

it is not important to know. It is obvious enough that there are too many of them and that if their numbers are diminishing, it must be very slowly. It is a matter of common knowledge that they have long been nuisances and that they have become a danger to the citizens of rural communities, and especially to railroads and to those who use railroads. We speak now, however, simply of their relations to the railroads; others may speak for the farmers and the village populations. On the railroads the tramp evil has become very serious and we judge that it is getting worse. We will give a few examples gathered from the records of the last few weeks. We have made no attempt to record all that we have heard of, or to get complete information from even one railroad. The cases mentioned are only examples and could be multiplied indefinitely.

About the first of April an express train on the Baltimore & Ohio Railroad was attacked by a gang of tramps near Garrett, Ind. The train stopped at Garrett to change engines. A passenger who got off to buy a sandwich was attacked by five men, who knocked him down and stole his overcoat, his watch and money. These men then boarded the train. The passenger who had been left behind gave the alarm, a message was sent ahead and a posse met the train at the next station at which it stopped. After a fight two of the tramps were shot, one fatally, and one was captured uninjured.

About the same date an express train on the St. Louis & San Francisco was held up and robbed. This, perhaps, was not done by tramps.

About the first of May a brakeman on the Baltimore & Ohio was assaulted by two tramps on a freight train while running through Ohio. One of them stabbed him, the blade of the knife breaking and remaining in the wound. The train was stopped in the yards and the two tramps were arrested and identified by the wounded brakeman.

Early in May a tramp negro tried to wreck a passenger train on the Pennsylvania Railroad in New Jersey. He was caught, tried and sentenced to State's prison.

About the middle of May two men were arrested in Wisconsin for trying to wreck a train on the Chicago & Northwestern by putting ties on the track. Their excuse was that they had a short time before narrowly escaped being run down by a train.

About May 20 a gang of tramps boarded an Erie freight train just out of Jersey City. The crew of the train had been armed; a fight took place and one wounded tramp was captured and others were arrested later.

May 28 a brakeman on the Missouri, Kansas & Texas was murdered by tramps near Temple, Tex. He was trying to put the tramps off the train, and was shot and killed.

About June 12, a freight train on the Lake Shore & Michigan Southern was boarded near Westfield, N. Y., by a gang said to have numbered 40. They broke into the freight cars and stole considerable clothing. Officers at Erie, Pa., were notified, and when the train arrived 13 of the tramps were captured, after a rather serious fight.

A newspaper published in Columbus, O., recently said that tramps in some parts of Ohio have become so desperate that the trainmen are instructed not to try to put them off at night, and stock men are afraid to attend to their cattle on the way, except while in cities. Hardly a train reaches the city without more or less of these vermin.

On a trunk line the other day, the writer noticed at least a dozen tramps on each of two freight trains, one close behind the other, and in both cases, many of the cars being gondolas, the tramps made no attempt at concealment. Many of them were within speaking distance of brakemen.

This gives a curious picture of the condition of affairs in a civilized country. We do not suppose that there is any other country in the world, where there are any railroads at all, in which it is necessary for the trainmen to fight for their own lives and to protect the property entrusted to them, and where tramps are tolerated as we tolerate weeds or woodchucks.

It does not seem probable that this evil will diminish of its own accord. The conditions which naturally breed tramps are likely to be more favorable to their production as time goes on, owing to increase of population and to greater difficulty in getting employment. It follows, therefore, that society must protect itself against this peculiar danger or it will continue to increase. Obviously, there is only one civilized way of meeting the situation and that is for the local officers of the law to take hold of it. It is highly undesirable that the railroads should be compelled to take the law into their own hands. The reasonable way would be for the towns and counties.

to send policemen and constables to yards and other places haunted by tramps, and to send officers to accompany trains that are liable to be attacked by them. Of course, the towns and counties are, as a rule, indisposed to add to the burdens of taxation by policing the railroad tracks and trains, by trying tramps and by supporting them in the prisons and workhouses. And yet this is what they will have to do; there is no other creditable way out of the difficulty. The present situation is not only disgraceful but highly dangerous to those who work on the railroads and to those who travel by rail.

Cheap Passenger Fares in England.

The average passenger fare per mile on English railroads seems to be decreasing even faster than the rates for farm produce, and this not by any modification of the normal scale for ordinary single or return journeys, but by constant fresh concessions to certain categories of travelers. The only important reduction in the general scale of fares which has taken place of recent years has been that for first and second-class passengers on the Great Western and South Western Railways, which came into force on the first of May. What the effect may be it is too soon to judge, but it is worth notice that the combined effect of the long established English system of making no reduction in third-class return tickets, and the new system of the South Western and the Great Western, which makes second-class tickets only 25 per cent. dearer than third class, while still maintaining the reduction on second-class returns is to make a return journey second class very nearly as cheap as in the third.

Special reductions are much more numerous. Two years back the North Eastern, alone of English companies, adopted under the title of "selected tours," the continental system of *Itinéraires facultatifs* or *cominirbare Rundreiseheften*. The same company also introduced, for the benefit of pedestrians and bicyclists, a system of cheap tickets from A to B, returning from C to A, the distance between B and C being probably between 10 and 20 miles through attractive scenery. This system has since been copied by the Manchester, Sheffield & Lincolnshire. The North Eastern also gives an unusually large reduction, single fare for the double journey on "week-end" tickets (i. e., from Saturday to Monday) all over its system. Similarly, tickets from Saturday to the Monday week following are issued for a single fare and a third. In addition to all these, the company has recently commenced the issue of what it calls "traders' district" tickets. These tickets, which are first class only and for not less than 12 months, enable the holder to travel over a group of lines, usually of about 200 miles in extent for an annual payment of, in some cases, £30 and others £25. Eight districts have been marked out by the company, but any lines not included can be added to a district on payment of an additional 2s. 6d. per mile per annum. Though designed for the use of traders, and so named, these tickets are issued to all who choose to apply for them.

Here is a somewhat similar concession, this time extending all over the country: On and after the first of July, members of any recognized association of commercial travelers will be able to obtain Friday to Monday return tickets at single fares from any station to any other station not less than 30 miles distant, so that they may be enabled to spend the Sunday at their own homes. On the membership voucher it is proposed for the first time in England to adopt the continental practice of attaching a photograph of the holder. Fortnightly season tickets during the summer months between London and the riverside stations on the Upper Thames issued at a rate equivalent to five or six ordinary return tickets are another new concession, this time by the Great Western Railway.

A very similar but not less important series of reductions is given by the ever-increasing development of excursion trains at fares usually not more than one farthing a mile. Here is an instance of the extent of this traffic: The South Western is running from London on the night of Saturday, June 6th, the following excursions: (1) to Plymouth, etc., say 230 miles, return ticket 8s., at 11:45; (2) to Bideford and Ilfracombe, etc., 230 miles, 8s. 6d., at 12:05; (3) to Tavistock, etc., 215 miles, 8s., at 12:15; (4) to Exmouth, 180 miles, 6s.; (5) Sherborne, etc., 120 miles, 5s., at 12:30; (6) to Crewkerne, etc., 130 miles, 5s., at 12:40. Another class of excursion that has increased immensely of late is the afternoon trip. For short distances these have been issued for years past, but this summer has seen an extension of them to considerable distances. Birmingham to London and back, 113 miles, leaving at noon and returning at midnight, fare 4s. is one instance. Birmingham to Bristol, 92 miles, leaving at 2:15 and returning at 11:05, fare 3s.,

is another. English passenger traffic responds readily to the encouragements that it receives. In Whitsun-week the Lancashire & Yorkshire Railway earned £88,000 from passenger traffic on its 530 miles of line—a record that could probably not be equaled or even approached anywhere else in the world.

May Accidents.

Our record of train accidents in May, given in this number, includes 34 collisions, 73 derailments and 2 other accidents, a total of 109 accidents, in which 32 persons were killed and 76 injured. The detailed list, printed on another page, contains accounts only of the more important of these accidents. All which caused no deaths or injuries to persons are omitted, except where the circumstances of the accident, as reported, make it of special interest.

These accidents are classified as follows:

COLLISIONS:	Rear.	But-ting.	Cross-ing and other.	Total.
Trains breaking in two.....	8	0	0	8
Misplaced switch.....	1	0	2	3
Failure to give or observe signal.....	1	0	0	1
Mistake in giving or understand-ing orders.....	0	3	0	3
Miscellaneous.....	2	1	3	6
Unexplained.....	3	5	5	13
Total.....	15	9	10	34

DERAILMENTS.	Total.
Broken rail.....	1
Loose or spread rail.....	3
Defective bridge.....	3
Defective switch.....	1
Broken wheel.....	3
Broken axle.....	6
Broken truck.....	3
Failed brakebeam.....	2
Failure of drawbar.....	4
Broken car.....	1
Loose wheel.....	2
Rupture of brake hose.....	3
Misplaced switch.....	3
Derailing switch.....	1
Animals on track.....	2
Landslide.....	1
Washout.....	3
Tornado.....	1
Malicious obstruction.....	5
Accidental obstruction.....	3
Unexplained.....	21
Total.....	73

OTHER ACCIDENTS.	Total.
Boiler explosion.....	1
Other causes.....	1
Total number of accidents.....	109

A general classification shows:

	Colli-sions.	Derail-ments.	Other acci-d's.	Total.	P. c.
Defects of road.....	0	8	0	8	7
Defects of equipment.....	8	24	1	33	31
Negligence in operating.....	13	4	0	17	15
Unforeseen obstructions.....	0	16	1	17	15
Unexplained.....	13	21	0	34	32
Total.....	34	73	2	109	100

The number of trains involved is as follows:

	Colli-sions.	Derail-ments.	Other acci-d's.	Total.
Passenger.....	4	20	1	25
Freight and other.....	51	53	1	105
Total.....	55	73	2	130

The casualties may be divided as follows:

	Colli-sions.	Derail-ments.	Other acci-d's.	Total.
Killed:				
Employees.....	7	8	2	17
Passengers.....	0	0	0	0
Others.....	3	0	0	3
Total.....	10	8	2	20
Injured:				
Employees.....	18	18	3	39
Passengers.....	5	20	0	25
Others.....	0	12	0	12
Total.....	23	50	3	76

The casualties to passengers and employees, when divided according to classes of causes, appear as follows:

	Pass. Killed.	Pass. Injured.	Emp. Killed.	Emp. Injured.
Defects of road.....	0	0	1	4
Defects of equipment.....	0	0	3	19
Negligence in operating.....	0	5	7	19
Unforeseen obstructions and maliciousness.....	3	8	4	6
Unexplained.....	3	12	2	5
Total.....	6	25	17	39

Twenty-one accidents caused the death of one or more persons each, and 20 caused injury but not death, leaving 68 (62 per cent. of the whole) which caused no personal injury deemed worthy of record.

The comparison with May of the previous five years shows:

	1896.	1895.	1894.	1893.	1892.	1891.
Collisions.....	34	47	42	68	61	67
Derailments.....	73	88	54	102	72	85
Other accidents.....	2	6	4	6	8	19
Total accidents.....	109	141	100	176	141	166
Employees killed.....	17	16	30	39	36	54
Others killed.....	15	9	4	27	30	9
Employees injured.....	39	62	70	94	109	98
Others injured.....	37	65	41	81	114	58
Passenger trains involved.....	25	34	41	49	47	64

Average per day:

	1896.	1895.	1894.	1893.	1892.	1891.
Accidents.....	3.52	3.58	3.23	5.63	4.55	5.35
Killed.....	1.03	0.81	1.10	2.13	2.16	2.93
Injured.....	4.10	3.58	5.63	7.06	5.03	5.03

Average per accident:

	1896.	1895.	1894.	1893.	1892.	1891.
Killed.....	0.29	0.22	0.34	0.37	0.47	0.37
Injured.....	0.70	1.14	1.11	0.99	1.55	0.93

Six passengers were killed in May. One of these was in a train overturned by the tornado near St. Louis, and the wonder is that a dozen or more were not killed. The derailment at Boston, on the 7th, in which two were killed, is classed as unexplained. The State Railroad Commissioners made a careful investigation of the case, and they think that a switch tender threw a switch under the train, and after the rear truck of one car and the forward truck of another had been turned upon the wrong track, straightened the switch again. The train was running slowly, and this would have been possible, but the switch tender does not own up to the act. This derailment was at an important terminal where there ought to have been interlocking and detector bars, and the Commissioners point out that with a detector bar the switch tender could not have made such a blunder. The derailment in which two passengers were killed at

Le Mars, Ia., on the 21st, illustrates the very much greater risk taken in carrying passengers on freight trains as compared with passenger.

There were 16 electric and cable car accidents in June, in which three persons were killed and 55 injured. One of the fatal accidents was at Buffalo, where a freight train ran into a street car. According to the reports the fault was with the street car. The other fatal accident was neither a collision nor a derailment; it was at St. Louis on the 30th. The overhead wire broke and fell upon the car, causing a panic; one passenger was killed by a shock from the wire and the other one in the strife of the crowd to get out of the car. Of the other accidents seven were collisions, one was a runaway, three were derailments from other causes, including one from a broken wheel; and three street cars ran into steam engines. These accidents occurred in New York, Brooklyn, Philadelphia, Buffalo, Chicago, Pittsburgh, Denver and Wheeling.

The disaster at Victoria, B. C., May 26, in which 55 passengers in an electric car were drowned, does not come within our record.

The "lady engineer" has made a great advance; the last we heard of her she was down in West Virginia and in the remotest part of that somewhat wild state at that; now she appears in Boston (or at all events the report is dated there), and the account of her achievements is characterized by a literary grace that must comfort her soul far more than a new Spring hat could do, or even a shirt waist with a Merula collar. It says:

A FAIR ENGINEER.

BOSTON, June 14.—Miss Mary Houston, the daughter of President Houston, of the Thompsonville (Conn.) Carpet Company, was at the throttle of the locomotive that drew the Hartford express over one of the roads out of Boston last night. Miss Houston has studied engineering in this country and Europe, and knows what she is about. The passengers did not know that the hand of a young woman guided the flying train, which ran steadily as a grandfather's clock and made the run on schedule time. The regular engineer and one of the officials of the road were in the cab to be prepared for any emergency, but it never came. Miss Houston handled the engine and the brakes like a veteran, blew the whistle at the proper places, made all the stops, eased up around curves and steamed valiantly up the grades and coasted cautiously down hill all the way to Hartford.

We should like to swallow this story, for we hate to believe that a Boston reporter will lie; but the guess-work foundation of his yarn is too apparent. We have no doubt that there was a woman, young or otherwise, fair or unfair, either on the engine or standing near it when it started; but when it is asserted that her German University training has qualified her to blow the whistle, we respectfully demur. And as for easing up around curves, it is plainly evident that she has no claim whatever to be called *fin de siècle*; no up-to-date engine-man eases up on curves nowadays. Who ever heard of steaming valiantly up grade? If the engine did not "lay down" on the first grade she came to, it was, we doubt not, due to the presence and advice of the fireman. Of course the statement about the young woman's ability to handle the air perfectly and to run into every station within ten seconds of the schedule will be accepted unquestioningly by every one conversant with women and locomotives. What runner ever found it necessary to know the road in order to manage these unimportant details?

The Train Dispatchers' Association, whose ninth annual meeting was briefly reported in our last issue, seems to have recovered a good share of the strength which it lost by the secession four years ago of those members who were spoiling for a fight with their employers. The membership is now nearly 500 and a good many of the conservative men who left the association in 1892 are coming back. Besides these, 25 new members were received at the meeting this year, and the attendance on the second day was over 50. The convention made Mr. George W. Stevens, General Manager of the Chesapeake & Ohio, an honorary member. Mr. Mackie, the Secretary, delivered an address on the nature and work of the association, in which he showed that the Dispatchers' Association occupies a useful field, which the members can profitably till by intelligent discussion of train rules and other subjects connected with their work. It is true, as the speaker said, that many of the intricate and delicate questions connected with telegraphic train orders can be discussed better by a company of experienced and clear-headed dispatchers than by superintendents and other officers whose minds are filled with a thousand other things, crowding out the dispatchers' technicalities with which they were formerly thoroughly familiar. Nearly every conscientious railroad officer who formerly handled trains, but whose mind has for some years been turned in other channels, recognizes that he is more or less rusty on some of the delicate points of every-day practice. Mr. Mackie reinforced his arguments by a reference to the fact that the views elaborated in the dispatchers' discussions in past years have modified the opinions of general managers and have become fixed in well-settled rules. A paper was read at the convention on the subject of Rule 523 (now 473), and Form L, which we hope to reprint, though it is crowded out of this issue for lack of space.

Atlantic City engine No. 1,027, which was illustrated in our last issue, has made a run which seems to be a little better than those of No. 1,026, the details of which we gave. On Saturday afternoon last, No. 1,027 took the four o'clock train from Camden to Atlantic City in 57 minutes, and the total weight of the train, exclusive

of engine and tender, was 701,450 lbs. There were 11 cars, a considerably heavier train than any of those shown in the former record. There was one combination car, 53,800 lbs., 7 passenger cars, 53,950 lbs. each, and three parlor cars 90,000 lbs. each. The engine and tender weighed 226,000 lbs., making the total weight of the train 927,450 lbs. The distance being 55½ miles, the rate of speed was 58.42 miles an hour. The weight on the driving wheels of this engine is 78,600 lbs.; diameter of drivers, 84½ in.; cylinders, 13 in. and 22 in. x 26 in.; heating surface, 1,835.1 sq. ft. On June 22, 1891, the Chicago Limited of the New York Central made a fast run with a train about the weight of this one, or, to be exact, 717,000 lbs., exclusive of engine and tender; and the speed of that run, exclusive of the stops to change engines, was 51.31 miles an hour. The only other run which we recollect, with a train of about this weight, was the experimental trip over the New York Division of the Pennsylvania, reported in the *Railroad Gazette* of Jan. 17 last. In that case the weight of the cars was 663,827 lbs. and of the engine and tender (class L., No. 1651) 204,800 lbs. The speed from Jersey City to Philadelphia, 90 miles, was 53.88 miles an hour and for 40.8 miles, west of Princeton Junction, it was 60.48 miles per hour.

In speaking last week of blacklisting we alluded to alleged cases of convictions of railroad officers for this crime. One such case, that at Vincennes, Ind., proves to have been nothing but a verdict of a jury. A later report says that the court set the verdict aside, retrying the case and deciding that there is nothing in the statute on the subject which can be interpreted as being designed to protect an employee (who has struck or been discharged) by requiring employers, or any one else, to refrain from making the fact known. The reporters, in their zeal to please "labor," seem to fall into the habit of dealing very carelessly with the facts. Evidence of carelessness is seen in the item which we now refer to. It is clearly unfavorable to the agitators, and yet it comes in the shape of an addendum to a Chicago despatch of the opposite tenor, that is, one which has no excuse for being except as a favor to the agitators. Probably they are like the man who was glad to be arrested as a pickpocket rather than not have any notoriety at all; and so are pleased to have their doings magnified in any way that the reporter can devise.

The Milwaukee street railroad strikers have abandoned their boycott against their former employers and the Employees' Association has given up running omnibuses. Thus it appears that the sympathy of the public is a doubtful staff to lean upon, even where you have four-fifths of the people on your side, as is said to have been the case at Milwaukee. Whatever the sins of the street-car company and the depth of the indignation of the people against it, the contest was, after all, decided by the practical factors of speed, comfort and cost. It is all very well to ride in a lumbering omnibus as an evidence of right sentiment, but the people of Milwaukee probably see by this time that that is not the best way to fight a street-railroad corporation.

Railroad Building in 1896.

The records of the new railroad building in the United States in 1896, which we have gathered, show that 717 miles of road has been built in the first half of the year. The total is not very different from the amount of new railroad which has been constructed in the first half of any year, since the conditions in 1893 called a sharp halt in railroad building. Last year, 622 miles of new road was built up to July 1, and the record in 1894, only 495 miles between Jan. 1 and July 1, showed how decisively extension work had been stopped. Figures as to the new track built in the first half of the year for seven years past make some interesting comparisons.

	1896	1895	1894	1893	1892	1891	1890
	717	620	495	1,025	1,284	1,704	2,055

It will be seen how greatly railroad extension has been checked by the conditions of the past few years, and there are no substantial signs that any large relative increase is to be expected in the near future.

Much the largest mileage, credited to any one company, of the total given for the six months, is that built by the Kansas City, Pittsburgh & Gulf, nearly 140 miles, in Arkansas, Texas and the Indian Territory. The second longest line was built by the San Francisco & San Joaquin Valley Road, 55 miles, in California.

The detailed statement of the new mileage by states is as follows:

	1896	1895	1894		1896	1895	1894
Alabama.....	25.5	20	23	Missouri.....	17.5	6	
Arizona Ter.....	64.6	23		New Jersey.....	4	35	
Arkansas.....	77	25.5	19	New York.....	1	26.3	2
California.....	101.5	23.5	18	North Carolina	3	18.5	19
Colorado.....	15	48		Ohio.....	44	29.5	43
Florida.....	50	7	50	Oklahoma Ter.		35	
Georgia.....	45.3	67.5	8	Pennsylvania..	37	47.8	30
Illinois.....	22	8	4	South Carolina		54	
Indiana.....	2.5	14.9		Tennessee.....	15		
Indian Ter.....	41	41.5		Texas.....	32.2	97	15
Iowa.....		4		Utah Ter.....	23	4	
Kansas.....		18		Vermont.....	3		
Kentucky.....	6			Virginia.....	14	4	3
Louisiana.....	33	2	36	Washington..	4		
Maine.....	12	14		West Virginia	4.5	13	27
Maryland.....	11.5			Wisconsin.....	28.3	24	
Michigan.....	40	9.5	6	Wyoming.....		20	
Minnesota.....		8.4	5				
Mississippi.....	22	3		Total U. S.....	717.3	622	495

The total for 1896 includes 20 miles on the Gulf & Ship Island road in Mississippi. This company has practically built 40 miles of new road this year. Of this, however, 20 miles was in rebuilding an old road on which track was laid some years ago, though the line has not been in operation, and new track has been laid this year.

Universal Unlocking Lever.

The engraving represents the end of a flat car to which is attached the universal unlocking lever made by the Buckeye Malleable Iron and Coupler Co. This lever is so constructed that the coupler is readily uncoupled when the car is loaded with timber or rails, projecting over each end of the car. The lugs shown on the lever are for the purpose of holding the chain in place to suit the different locations of the locks of different couplers.

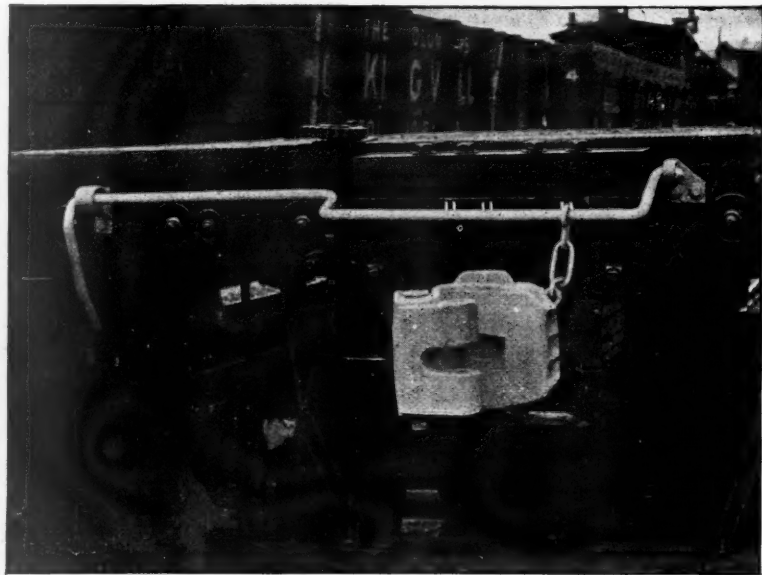
The Master Car Builders' Convention.

(Continued from page 453.)

The officers were installed, brief speeches of acceptance were made by Messrs. Crone, Bronner, Schroyer and Chamberlain, and, Mr. Crone having taken the chair, the thirtieth annual convention adjourned.

EXHIBITS.

Alexander Car Replacer Mfg. Co., Scranton, Pa.—Model of the Alexander car and engine replacer, a pair of replacers and specimens of the Von Weissenfels air-brake filter.
American Brake Beam Co., Waukegan, Ill.—Full size brake beam.
Armstrong Bros. Tool Co., Chicago, Ill.—Specimens of patent tool holder for turning, planing and boring metals.
Betts Automatic Coupler Co., Wilmington, O.—Model of patent car coupler.
F. W. Bird & Son, East Walpole, Mass.—Samples of Columbia car roofing.
Willard A. Bonne, 26 Broadway, New York City.—Patent lantern.



Universal Unlocking Lever.

Bruner, Sprague & Co., Chicago, Ill.—Samples of asbestos for lagging locomotives, steam pipes and all surface work in plastic form and for insulating cars and buildings.
L. C. Chase & Co., Boston, Mass.—Specimens of mohair car plushes, plain and fringed, made by the Sanford Mills of Maine. Also samples showing the various processes through which the hair from the Angora goat is put before it finally becomes plush.
Crosby Steam Gage & Valve Co., Boston, Mass.—The Crosby muffler, thermostatic water back locomotive steam gage recording steam gage for controlling air-brake service and tests; steam engine indicators, with Sargent electric attachment for taking any number of cards simultaneously; chime whistle, test gages and Johnson's blow-off valves.
Davis Car Shade Co., Portland, Me.—Samples of the Davis Automatic car window shade.
Detrick & Harvey Machine Co., Baltimore, Md.—An open side planer, Adams double bolt threader and a Smith band saw filing and setting machines are shown in operation. A working model of the Adams single bolt threader is also exhibited.
Detroit Lubricator Co., Detroit, Mich.—An improved triple feed lubricator having entirely new features for introducing oil to the cylinders of locomotives (against back pressure), and especially in engines carrying high steam pressure.
Dressel Railway Lamp Works, 1596 Vanderbilt avenue, New York City.—Train marker lamp, for rear of trains; revolving deck caboose lamp; classification locomotive lamp and samples of the new separable Dressel burner.
Richard Dugdon, 24 Columbia Street, New York City.—Plain 15-ton hydraulic claw jack; horizontal 15-ton hydraulic claw jack, with shifting claw; 15-ton hydraulic base claw jack; 7-ton car brass jack; a hydraulic punch and stand, and a roller-tube expander.
Dumping Car Improvement Co., 26 Cortlandt street, New York City.—A full size McMahon door operating device for hopper bottom cars.
Duval Metallic Packing Co., 43 John Street, New York City.—Samples of Duval metallic packing for locomotives, steamships, stationary and pumping engines.
Eastwood Wire Mfg. Co., Belleville, N. J.—Samples of Eastwood valves with renewable copper discs.
Silas Fader, Vancouver, B. C.—Model of patent device for operating dump car doors. An attachment was applied to a car of the S. & H. Canal Co. for exhibition purposes.
Falls Hollow Staybolt Co., Cayohoga Falls, O.—Samples of hollow safety staybolt iron for use in locomotive, marine and stationary boilers.
General Agency Co., 168 Broadway, New York City.—Full size and sectional Smith triple expansion exhaust pipes for locomotives.
General Electric Co., Schenectady, N. Y.—Large photograph of electric locomotive drawing the Royal Blue train through the Baltimore tunnel of the Baltimore & Ohio R. R., and a stand containing 48 views of motors, dynamos, generators, interiors of power plants and of electric locomotives for surface and mine railroads.
Goodwin Car Co., 55 Broadway, New York City.—Model, photographs and sectional drawings of the Goodwin patent dump car.
J. Milton Hagy, Philadelphia, Pa.—Samples of the Edgar patent knotted waste ball journal packing for locomotives and cars.

Hale & Kilburn Mfg. Co., Philadelphia, Pa.—Specimen Walk-Over and "No. 75" car seats. The company also exhibits one of 1,400 Spring Edge Cushion Seats placed in 50 coaches built for the New York, New Haven & Hartford R. R. in May, 1882, which was recently removed from Car No. 195. The other seats are still in service.

M. C. Hammett, Troy, N. Y.—To the exhibit already mentioned, a pneumatic bell ringer and automatic feeding guide and main rod cups were added after our last issue had gone to press.

E. W. Harris, Palisade, Nev.—Exhibits the Davis variable exhaust nozzle for locomotives.

S. T. Hodge & Co., Detroit, Mich.—McCoy lubricators for locomotives and stationary engine cylinders, with improved over-pressure valve, steam tube leading to cylinders and method of replacing sight feed glass without stoppage of, or inconvenience to, engine. These improvements are also shown in sections. In addition a gas-engine lubricator, equalizing check valves, improved drain valve and McCoy "Perfection" glass oilers with sight feed, pendulum lens and patent regulating device are exhibited.

Jerome Metallic Packing Co., Chicago, Ill.—The McIntosh pneumatic blow-off cock, to be operated by air from the cab of a locomotive, and samples of the Jerome metallic packing.

H. W. Johns Mfg. Co., 87 Maiden Lane, New York City.—A complete line of asbestos roofing, roof coatings and cements, building felt, waterproof sheathing, cement felt, air-chamber coverings, sectional pipe coverings, fire felt, locomotive lagging, sponge felt, asbestos-sponge cement felt, asbestos rope packing, wick packing and sheet packing, vulcanized rope packing, asbestos and rubber cloth, tape and gaskets, asbestos cloths, fireproof rope, cords, twine, rugs, mats and screes, asbestos furnace and retort cement, plastic stove lining and concrete coating and vulcanized insulation for steam pipes. Some asbestos roofing and paint were applied to the shed over the boiler, which furnished steam for certain exhibits referred to in our last issue.

Keasbey & Mattison Co., Ambler, Pa.—Magnesia lagging for locomotive boiler.

J. C. Lock, San Jose, Cal.—Model of bottom lock lever for car coupler.

Manning Coupler & Machine Co., Atlanta, Ga.—Model and full size automatic gravity coupler, link-and-pin type.

Mason Regulator Co., Boston, Mass.—Specimens of the Mason locomotive reducing valve, air-brake pump regulator and pump pressure regulator, and a model of the Mason improved steam pump.

James McGee, Houston, Tex.—Model of patent beamless car brake.

Thornton N. Moteley & Co., 43 John street, New York City.—Samples of the Le Bel electric kindler for lighting fires in locomotive and stationary boilers.

Oval Brake Beam Co., Boston, Mass.—Marden pressed steel hollow brake beam.

Plush Renovating Co., Baltimore, Md.—Sample of plush cleaned and renovated by the "Arcanum" powder compound.

Job T. Pugh, Philadelphia, Pa.—Samples of augers, machine bits and hollow mortising chisels.

Schirra Car Seal Co., Pittsburgh, Pa.—Samples of patent seal for freight car doors.

S. & S. Coupler Co., Louisville, Ky.—Models of two styles of automatic link and pin couplers and model of a combined automatic link and pin and vertical pin coupler.

Standard Paint Co., 81 John street, New York City.—Samples of P. & B. Ruberoid car roofing and P. & B. insulating and sheathing paper and electric insulating tape.

Universal Safety Car Bearing Co., Jersey City, N. J.—Sample and model of Baker's universal safety journal bearing.

Royal C. Vilas, Chicago, Ill.—Exhibition of the National electric headlight applied to a locomotive of the Delaware & Hudson Canal Co.

Westinghouse Air Brake Co., Pittsburgh, Pa.—Mounted and unmounted specimens of the Westinghouse friction draft gear.

Clarence Whitman & Co., 39 Leonard street, New York City.—Model of a section of a smoking car showing the application of Pantasote, a substitute for leather, to car window curtains, head linings and car upholstery. Two Pantasote car window curtains, that had been in use on the New York Central & Hudson River for two years were exhibited as was also a car seat upholstered with the same material, having had two years of service in a smoking car of the Delaware, Lackawanna & Western.

William Wolstencroft's Sons & Co., Frankford, Philadelphia, Pa.—Pneumatic tools for calking, bending flues, chipping, removing scale from armor plate and sand and scale from steel castings.

Among the many novel features of the exhibits was a section of a baggage car embodying some suggestions for the arrangement of bicycles while in transit. This was submitted by the League of American Wheelmen.

Train Accident in the United States in May.

COLLISIONS.

REAR.

3d, on Pittsburgh, Fort Wayne & Chicago, near Millbrook, O., a freight train broke in two and the rear portion ran into the forward one, wrecking 8 cars; one brakeman injured.

3d, 11 p. m., on Chicago Great Western, near Sycamore, Ill., a freight train broke in two, and the rear portion afterward ran into the forward one, rupturing an oil tank. The gas escaping from the tank was ignited by the conductor's lantern and exploded, destroying three other oil tanks and several other cars and buildings standing near, including a dining-car. The conductor was burned to death.

16th, on New York Central & Hudson River, near Suspension Bridge, N. Y., a freight train ran over a mis-

placed switch and into the rear of a switching freight, standing on the sidetrack; 4 trainmen injured.

And 12 others on 8 roads, involving 1 passenger train and 16 freight and other trains.

BUTTING.

2d, on Northern Pacific, at Livingston, Mont., butting collision between a west-bound passenger and an east-bound stock train, making a bad wreck. The engineer of the freight was killed and 6 other trainmen were injured.

3d, on Southern Railway, near Profit, Va., butting collision between a north-bound fast freight and a south-bound freight drawn by two engines, wrecking all 3 engines and 14 cars. Two firemen were injured, one fatally. It is said that the engineer of the north-bound train failed to read an order which he had received, directing him to stop at Profit.

19th, on Columbia, Newberry & Laurens, near Chapins, S. C., butting collision of freight trains, wrecking both engines and 12 cars, which took fire and were burned up; engineer and two tramps killed. It is said that a telegraphic order was misunderstood.

19th, on Norfolk & Western, near Ceredo, W. Va., butting collision of freight trains, wrecking the engines and 20 cars. A tramp was killed.

23d, on Duluth & Iron Range, near Tower, Minn., butting collision of freight trains, wrecking one engine and several cars. One engineer and one fireman were killed and two other trainmen were injured.

And 4 others on 4 roads, involving 1 passenger train and 7 freight trains.

CROSSING AND MISCELLANEOUS.

5th, on Ohio River road, near Belleville, W. Va., a freight train descending a grade broke in two and the forward portion, after running about a mile, was stopped. It was then run back at considerable speed and met the rear half, making a bad wreck. Two brakemen were injured, one of them fatally.

6th, at Fort Worth, Tex., a passenger train of the Missouri, Kansas & Texas was run into by a switching freight train of the Texas & Pacific, damaging 3 passenger cars. Five passengers were injured.

9th, on Norfolk & Western, near Portsmouth, Va., collision of freight trains due to a misplaced switch, making a bad wreck. One engineer was injured.

20th, on Pennsylvania road, at Leaman Place, Pa., a local freight train switching on the main track was run into by a fast through freight, wrecking 16 cars; engineer and fireman injured.

And 6 others on 6 roads, involving 12 freight trains.

DERAILMENTS.

DEFECTS OF ROAD.

3d, on Houston, East & West Texas, near Livingston, Tex., a passenger train broke through a bridge and 3 cars were badly damaged. The engineer was killed.

4th, on Baltimore & Ohio, near New Haven, O., a freight train was derailed by a broken rail and 18 cars were wrecked. One brakeman and 6 tramps were injured, two of the latter fatally.

6th, on Canadian Pacific, at Lake View, Me., a passenger train was derailed by spreading of rails and a brakeman was injured.

15th, on New York Central & Hudson River, at Buffalo, N. Y., the Empire State Express, running about 20 miles an hour, was derailed at a defective facing point switch.

16th, on St. Louis & San Francisco, near Carthage, Mo., the engine of a freight train broke through a bridge which had been weakened by a freshet, and the engineer and fireman were injured.

And 3 others on 3 roads, involving 3 freight trains.

DEFECTS OF EQUIPMENT.

19th, on Lake Shore & Michigan Southern, near Toledo, O., an empty stock car in a freight train was crushed by the sudden stoppage of the front portion of the train, in consequence of the rupture of an air-brake hose, and 6 tramps riding in it were injured, one of them fatally.

23d, on Southern Railway, at Irvington, Va., a car in a freight train was derailed by a drawbar, which broke and fell upon the track, and 5 cars were wrecked. The fireman was injured.

26th, 1 a. m., on Northern Central, near Fisher's Ferry, Pa., 15 cars in a freight train were derailed by a sudden stoppage due to the rupture of an air-brake hose. A lantern in a horse car started a fire and 5 cars were burned up. A brakeman was badly injured.

A few hours later, at Kapps, the forward part of this train, which had continued its journey, was again derailed from a similar cause and 3 cars were ditched. A brakeman was injured.

30th, on Western New York & Pennsylvania, near Ebenezer, N. Y., a freight train was derailed by a broken wheel and 18 cars were wrecked. A brakeman was killed. And 19 others on 13 roads, involving 3 passenger and 16 freight and other trains.

NEGLIGENCE IN OPERATING.

20th, on Pennsylvania road, near Bolivar Junction, Pa., a freight train was ditched at a derailing switch and the engine fell down a bank. The fireman was badly injured.

And 3 others on 3 roads, involving 1 passenger train and 2 freights.

UNFORESEEN OBSTRUCTIONS.

2d, on Northern Central, near Georgetown, Pa., a Philadelphia & Erie passenger train was derailed by a landslide and most of the cars fell down a high bank. The express messenger was injured.

4th, 3 a. m., on Burlington & Missouri River, near Liberty, Neb., a freight train was derailed by a washout and 3 cars were wrecked; conductor and engineer killed and fireman injured.

15th, 3 a. m., on Chicago Great Western, near Talmage, Ia., a passenger train was derailed at a washout and 3 passenger cars went into the ditch. Two passengers were injured.

15th, on Chicago, Milwaukee & St. Paul, at Waldo, Wis., a freight train was derailed by a pile of sleepers lying on the track, and the engine and 7 cars were wrecked. The engineer, one brakeman and a tramp were killed and the fireman and one tramp were injured.

16th, on Chicago, Burlington & Quincy, at St. Augustine, Ill., a freight train was derailed by running into a corn crib, which had been blown upon the track by a high wind.

17th, on Little Rock & Memphis, near Brinkley, Ark., a passenger train was derailed by running against a tree which had fallen upon the track, and after running a short distance on the sleepers the engine fell through a trestle; engineer and fireman injured.

21st, 10:30 p. m., on Chicago, St. Paul, Minneapolis & Omaha, at Le Mars, Ia., a freight train moving backward slowly (in the yard) was derailed by running over a cow, and 2 passengers riding in the caboose were killed.

27th, 5:30 p. m., on the bridge at St. Louis, Mo., a passenger train on the Chicago & Alton, running on the north track, was overturned by a tornado, two of the

cars falling over upon the south track. Only 2 passengers were seriously injured.

27th, 6:15 p. m., on Terminal Railroad, at Granite City, Ill., 6 cars of a passenger train were overturned by a tornado. There were in the cars about 300 passengers, but the train was moving slowly at the time and only 3 or 4 passengers were very much injured. One of these, however, was fatally hurt and another probably so.

And 7 others on 7 roads, involving 4 passenger and 3 freight trains.

UNEXPLAINED.

7th, on New York, New Haven & Hartford, at Park Square Station, Boston, a passenger train was derailed at a switch and 2 or 3 cars were considerably crushed. Two passengers were killed and the engineer and 1 passenger were injured.

8th, on Illinois Central, near Brookhaven, Miss., a train consisting of an engine, one car and caboose was derailed and overturned; 2 trainmen injured.

8th, on New York, New Haven & Hartford, at Pelham Manor, N. Y., a freight train was derailed and a brakeman injured.

9th, on Ohio Central, near Ohio City, O., a car in a passenger train was derailed and 2 passengers were injured.

11th, on Florida, Central & Peninsular, at Anderson, Ga., the tender of the locomotive of an excursion train was derailed, and, with 4 cars, fell into the ditch. One passenger was killed and 9 injured.

11th, on St. Louis, Iron Mountain & Southern, near Austin, Ark., a freight train was derailed and 5 loaded cars were ditched. Two tramps were killed.

13th, 3 a. m., on Baltimore & Ohio, near Mineral Spring, O., the tender of the engine of a passenger train was derailed and the fireman was injured.

13th, on Union Pacific, Denver & Gulf, at Sullivan, Col., a freight train was derailed and 2 tramps were injured.

23d, on Atlantic & Pacific, near Albuquerque, N. M., a car of petroleum in a freight train was derailed and took fire in some way and exploded, wrecking 5 cars and a caboose, which were burned up. A brakeman was fatally injured.

And 12 others on 12 roads, involving 2 passenger and 10 freight and other trains.

OTHER ACCIDENTS.

18th, 9 a. m., on West Shore road, near Tomkins Cove, N. Y., a passenger train ran against a keg of gun powder which had been placed between the rails, and a loud explosion followed. The engineer was looking out of the window at the time and lost his moustache and eyebrows by the fire that accompanied the explosion.

27th, on the Rio Grande Western, near Helper, Utah, the locomotive of a freight train was wrecked by the explosion of its boiler; conductor and one brakeman killed, engineer and fireman injured.

A summary will be found in another column.

TECHNICAL.

Manufacturing and Business.

The order of the Pedrick & Ayer Co., of Philadelphia, for tools for the locomotive works to be built for the Sarmova Co., at Nijni Novgorod, Russia, includes large open side planers and a standard 12 x 30 shaper; pneumatic equipment, consisting of air compressor, etc., a number of hoists, and also a large number of Phoenix drills, otherwise known as the Hæsseler Pneumatic drills.

The Pawtucket Manufacturing Co., of Pawtucket, R. I., has received an order for 15 bolt machines for the Russian-American Locomotive Works.

The Illinois Steel Co. has declared a quarterly dividend of 1½ per cent. President Gates says that the company was never in better condition. The works are running to their fullest capacity and the output is sold for three months ahead.

The Brown Hoisting and Conveying Machine Co. has just sold to E. D. Smith & Co., contractors, two of its 10-ton locomotive cranes, which will be used in the work of the firm in extending the wheel pits of the Niagara Falls Power Company to accommodate seven more 5,000 H. P. turbines. These cranes will be fitted with extra large drums to take the great length of rope that will be required in hoisting out in the wheel pits.

The Clayton Air Compressor Works, with office in the Havemeyer Building, New York, reports that its business during the past few months shows a very large increase in volume as compared with the same period last year. One of the recent important instalments of Duplex compressors has been at the Pennsylvania shops at Altoona.

W. S. Calhoun, who has been the railroad representative of the Brussels Tapestry Co., of Chauncey, N. Y., has been appointed General Manager of the Company.

Thomas A. Smyth has been appointed Receiver of the Auto-Pneumatic Signal Company, of Rochester, N. Y. The application for a Receivership was made at the instance of James H. McCartney.

The court has authorized the sale of the old Harrisburg (Pa.) Car Works, which have long been idle. The order of sale was the result of a bill in equity filed by stockholders of the car company.

Haus iron mail cranes are being erected along the Louisville Division of the Pittsburgh, Cincinnati, Chicago & St. Louis, and the cranes will be ready for use some time this week. The Lehigh Valley and the Cleveland, Cincinnati, Chicago & St. Louis are also putting up cranes of this patent. It delivers and receives mail pouches from trains moving at any speed, and its use has been approved by the United States Post Office Department.

Iron and Steel.

The Bethlehem Iron Co. has practically completed its slabbing mill and large plate mill at South Bethlehem, Pa. The new plate mills are housed in a building 1,000

ft. long, which forms an extension of the open-hearth department.

A new casting plant, for the production of open-hearth steel, is being finished at Montpelier, Ind., by the Indiana Steel Casting Co. Seven brick buildings have been already erected, and one 15 ton open-hearth furnace has been completed. Natural gas will be used as fuel. The company proposes to make castings of all grades.

An open-hearth steel plant is soon to be erected at Sharon, Pa., to be operated in connection with the plant of the Sharon Iron Co., at Sharon. The mill will be built by a new company, the officers of which will be Frank Buhl, President; Theodore Buhl, Vice-President; David Adams, Treasurer, and J. M. Pressley, Secretary.

The Berlin Iron Bridge Co. has the contract for a steel rolling mill building, 103 ft. x 112 ft., for the Pennsylvania Bolt & Nut Co., of Lebanon, Pa. The building will have a steel frame and the roof and sides will be corrugated iron.

New Stations and Shops.

The plans for the new shops of the Merchants' Despatch, near Rochester, N. Y., have been completed, and the erection of the buildings will begin shortly. The site selected is at the new town of Penfield, on the line of the New York Central, with a track frontage of 1,800 ft. The buildings will be constructed of brick and iron and will consist of a main building, 125 x 600 ft.; another 125 x 300 ft.; a machine shop, 100 x 200 ft.; a general storage house, 60 x 300 ft.; together with a paint shop, blacksmith shop, power house and detached office building. At this plant will be concentrated the repair work of all the cars owned and operated by the company, upward of 10,000. Heretofore the work of the Merchants' Despatch has been done at Buffalo, Depew, and other points, but these shops will be abandoned and the entire plant located at Penfield. Heretofore less than one-third of the repair work of the company has been done at the Rochester shops. The new plant when in operation, which it is stated will be some time during the coming fall, will give employment to upwards of 1,000 men.

The directors of the Georgia Car and Manufacturing Co., which proposes to build car shops at Savannah, Ga., announce that the charter will be issued in a few days, and that with the organization of the company formally completed, work on the plant will begin at once. The principal buildings will consist of the following: An engine and boiler-house 75 ft. x 106 ft.; a machine, blacksmith and workshop 106 ft. x 375 ft.; a building for the office; also warehouses, patterns and cabinet work 106 ft. x 150 ft.; a shop for passenger cars 106 ft. x 500 ft.; a planing mill 106 ft. x 500 ft.; lumber warehouse 106 ft. x 150 ft.; a freight-erecting shop 106 ft. x 600 ft.; a wharf and a lumber warehouse.

Testing Alabama Ores.

Mr. E. A. Blankman, Government Assayer, has been making an examination and test of the ores at Birmingham, Ala., to determine their adaptability to steel for cannon and armor plates. Mr. Blankman's mission is to determine whether the Alabama ores are suited to cannon making, without admixture.

Bids for Torpedo Boats.

The Navy Department at Washington has prepared a draft of an advertisement inviting bids for the construction of the 13 torpedo boats which have been authorized by Congress. Three of the boats are to have a speed of 30 knots an hour, the other 10 being divided into two classes, with speed limits of 22½ knots and 20 knots respectively.

60-ft. Rails for the Panhandle.

The officers of the Panhandle Division of the Pennsylvania have decided to lay heavy 60-ft. rails through all the tunnels of the road, as it becomes necessary to replace the old rails.

The Electric Headlight.

One convention exhibit which can be classed as an entertainment was given by Royal C. Vilas, of Chicago, through the courtesy of Superintendent Hammond, of the Delaware & Hudson Canal Co. On Monday and Tuesday evenings of this week a number of railroad officials and others left the depot in Mr. Hammond's inspection car for an exhibition of the National Electric Headlight, with which one end of the car is equipped. By trial made by members of the party, a newspaper was readable 120 rail lengths, or 3,600 ft. from the car. Signals could be readily seen at even a greater distance, a red signal having been plainly distinguished at a distance of one and one quarter miles from the car. For regular service on a locomotive, the engine and dynamo, the former taking steam from the locomotive, are placed between the smoke stack and headlight.

THE SCRAP HEAP.

Convention Notes.

The chairmen of the various committees appointed by the Supply Men's Association, at their meeting on Tuesday evening, have announced the following as assistants:

Finance: J. L. Mallory, Chairman; Richard P. Scales, H. A. Norton, W. P. Cosper, F. A. Barbey and E. B. A. Twining. Entertainment: R. C. Fraser, Chairman; S. D. Barnett, E. H. Power, W. D. Sawyer, C. D. Bailey, A. L. Whipple, Jr., J. B. Hicks, A. C. Johnston, F. A. Barbey, G. H. Bryant, W. H. Robinson, J. F. Muldoon, F. M. Curtis, J. E. Howe, F. S. DeRonde, R. L. Thomas,

W. H. Andrews, W. G. Irwin, J. G. Hendrickson and D. C. Noble. *Carriages and Transportation*: W. E. Bryant, Chairman; John B. Hicks, Alfred F. Conklin, George L. Fowler, James E. Minor, Fred M. Patrick, Chas. W. Martin Jr., C. Arthur Johnson, William Ross and Jas. Schevers. *Flowers*: A. H. Zenger, Chairman; W. E. Bryant, L. B. Sherman, G. H. Bryant, B. E. D. Stafford, W. M. Simpson, E. VanCamp, George H. Sargent and J. D. Styles. *Printing*: James H. Bailey, Chairman; W. D. Crozman, C. F. Street, Harry W. Frost, R. VanArsdale, John A. Chater, W. Y. Barnett, L. B. Sherman, J. B. Ecclesine, John N. Reynolds and E. A. Simmons.

At a meeting at Congress Hall of the Secretaries of the different railroad clubs, there were present: E. L. James, of the New England Club; S. A. Charriot, of the Southern and Southwestern; Harry D. Vought, of the Central; W. W. Wheatley, of the New York, and Walter D. Crozman of the Western Club. Messrs. Fogue, of the Northwest Club, and Morse, of the new St. Louis Club, were detained, but sent letters indorsing the objects of the meeting, viz., harmonizing and standardizing of methods, interchange of ideas, etc. Another meeting will be held in Buffalo in September, and it is planned to hold semi-annual meetings.

Railroad Legislation in Ohio.

The report of railroad legislation in Ohio, printed in our issue of June 12, should be supplemented by the two following paragraphs:

Senate bill No. 356 declares bicycles to be baggage and requires them to be transported the same as other baggage. They need not be crated and no more than one need be carried for any one person.

House bill No. 598 requires every railroad to put a chemical fire extinguisher on every passenger train within a year and one on each passenger train yearly thereafter until every car is equipped. If extinguishers cannot be procured for less than \$15 apiece the law does not apply. The Railroad Commissioner is to supervise the execution of the law, approve extinguishers and designate which cars shall be first supplied. The penalty for violation of the law is \$25 to \$100 a day.

Accident on the Lake Street Elevated, Chicago.

At 10:15 o'clock, Saturday morning, June 20, a train on the Lake Street Elevated road left the track just west of Talman avenue. The train consisted of one motor car and two trailers. The motor car, after running over the ties for a short distance, left the structure and fell to the street below. The second car likewise left the track but remained on the structure, one end projecting beyond the iron work. The third car did not leave the track. The motor car was completely wrecked, but the second and third cars were not so badly broken. The track was damaged only to the extent of a few broken ties and tinbers. The motorman and five passengers, who were in the forward part of the train, were injured, the motorman only escaping instant death by jumping from the car before it fell into the street, but his injuries are very serious. No trains were run from the time of the accident until three o'clock Sunday afternoon, and they were then hauled by steam locomotives on the old schedule.

The cause of the accident cannot be definitely stated now, but from the best information at hand, it appears that the car was running fast on a sharp reverse curve and at this point there is a switch where a siding joins the main track. The most likely supposition is that the front car left the track at the switch, as there were no guard rails at either the switch or frog.

Lake Notes.

Freight rates on iron ore from the head of Lake Superior to Lake Erie have dropped to 85 cents bid. When the season opened they were quoted at \$1 and several millions of tons were contracted for at that price and at \$1.05 for the season to November. Notwithstanding the weakness in rates large quantities of ore are going forward. The total movement to Lake Erie has been about 250,000 tons in excess of the corresponding time last year. Ashland, however, is 175,000 tons behind a year ago. In one day recently 18,500 tons were shipped from Duluth, and a day record from Two Harbors was 72,000 tons.

The American Steel Barge Co. will launch the largest vessel it has ever built, the 400-ft. John Ericsson, for the Bessemer Steamship Co., July 6, and her consort, the next in size, a few days later.

On Lake Michigan last week the Christopher Columbus, of the whaleback fleet, made a record of 21 miles an hour, and it is claimed by her officers that the distance of 84 miles between Chicago and Milwaukee can be covered by her in exactly four hours.

At Duluth last week 100,000 bushels of wheat were loaded into the schooner Armenia in 80 minutes.

By reason of the change of rail tariffs from the Ohio coalfields much of the northwestern territory heretofore covered by Duluth coal companies is now supplied with Indiana and Illinois coal by all rail. Unless there is a change the coal traffic of the lakes is likely to be limited.

R. P. I. Alum. i Association.

The annual meeting of the Alumni Association of the Rensselaer Polytechnic Institute was held in Troy June 10. A resolution was adopted urging the Trustees to appeal to the citizens of Troy, alumni and friends, for an endowment fund of \$500,000.

Mr. Joseph M. Knapp, M. Am. Soc. C. E., was elected President of the Association.

The commencement exercises occurred in the evening, the address of the occasion being given by Mr. Theodore Voorhees, a graduate of the Institute and First Vice-President of the Philadelphia & Reading Railroad.

The Boston Subway.

Certain citizens of Boston who disapprove the plans for a subway through the Common and Tremont street entered suit for an injunction against the Commissioners who are constructing the tunnel, but they have lost their case, the full bench of the Supreme Court deciding that the law is sound. Chief Justice Field dissents, pointing out that the use of the Public Garden is not given in terms by the statute. He holds that such use was not intended by the Legislature. This point is met by the opinion of the Court, which holds that it was probably contemplated that the subway should remain below the surface of the ground in Park Square and on the Common at the corner of Boylston and Charles streets, which would necessitate the use of a part of the Public Garden. The Court felt bound to sustain the law because it was ratified by a special popular vote; but it is said that if the voters had all understood the intent of the act, as regards the occupation of the Public Garden, they probably would not have accepted it.

Shipbuilding in Germany.

A late issue of *Engineering* (London) contains an interesting paper by a German member of the Institute of Naval Architects on "Shipbuilding in Germany." The author says that although labor is cheaper in Germany than in England, this advantage is more than outweighed by the higher cost of material and of coal. Furthermore, the comparative scarcity of work tends to restrict the number of skilled workmen, and the laws with regard to juvenile labor tend still further in the same direction. Moreover, the contributions to accident insurance and old age pensions, which are obligatory upon employers, are a heavy burden. Still, the German shipbuilders are making good progress. The North German Lloyd was among the first of the companies to put high speed steamers on the North Atlantic line. These were at first built at Fairfield, but later they have been built at the Vulcan yard, Stettin. A ship now building there is 625 feet between perpendiculars, 66 ft. beam, 43 ft. molded depth, and has twin engines to develop 28,000 H.P. The ocean tramp has not prospered in Germany. Owners who have begun with tramp steamers have ended in some regular line. A good many steel sailing vessels of considerable size and good speed have been built. Last year a steel five-masted bark, the Potosi, was built, which is the largest sailing vessel afloat. Her dimensions are 360 ft. between perpendiculars, 49½ ft. beam, 31 ft. molded depth and 4,026 tons dead weight. Steel was readily adopted at first as a shipbuilding material and in the first two years German steel could be bought cheaper than English. Now the German steelmakers cannot compete with the British material laid down in the courts. There are no duties on shipbuilding material, or on coal, nor is any difference made in harbor dues between German and foreign built ships; nor does the Government pay any subsidies to the merchant marine, except £200,000 for the Eastern and Australasian services and £44,000 for an East African line, these being mail subsidies. Other than this there are no subventions or privileges of any sort whatever other than those given to ships of all nationalities.

The Chesapeake & Ohio Canal.

The decision of the Maryland Court of Appeals in the appeal by the state from Judge Stake's order extending the time for the operation of the Chesapeake & Ohio canal by the trustees for the bondholders insures the existence of the waterway at least until May 1, 1901. On Oct. 2, 1890, Judge Alvey passed a decree for the sale of the canal. But inasmuch as by the sale of the property, in the opinion of Judge Alvey, the holders of the bonds of 1844, which amount to \$1,700,000, with many years' interest, would entirely lose all security, he suspended the operation of the decree for four years, from May 1, 1891, and gave the property over to the trustees of the bondholders to be repaired and operated by them. Upon the expiration of the four years the revenues were found to have been entirely inadequate for the purposes named in the decree (expenses of receivers, cost of repairs, interest, etc.). The trustees, however, asked for an extension of the time. They alleged that the failure of sufficient revenues was due, among other things, to a strike in the coal mines, interruption of traffic by drought, and, further, that for so short a time as four years people were not willing to build boats or to engage in the transportation business. They also asked the court to sanction a contract with a corporation known as the Chesapeake & Ohio Transportation Co., which was to conduct the transportation business on the canal, paying to the trustees an annual sum. To the passage of this order the state, through the Attorney-General, objected and asked for the sale of the property and the distribution of the proceeds of sale, according to priorities. Judge Stake, however, granted the additional time, extending the term granted by Judge Alvey to 10 years, or until May 1, 1901. He also approved the proposed contract. From this order the state appealed, and it is this appeal which has been decided in favor of the trustees, the Court of Appeals affirming Judge Stake's order, three judges, however, dissenting.—*Baltimore Sun*.

LOCOMOTIVE BUILDING.

The Erie road is in the market for 20 engines.

The Baltimore & Ohio has awarded a contract to the Baldwin Locomotive Works for 20 locomotives. This order includes 10 heavy consolidation locomotives, with cylinders 22 in. x 28 in., six 10-wheel passenger locomotives, with 78 in. drivers and cylinders 21 in. x 26 in. and four passenger locomotives, with 68 in. drivers and cylinders 20 in. x 26 in. The company, with this order, has now under contract 75 locomotives and 5,000 freight cars.

CAR BUILDING.

The Boston & Albany is in the market for passenger cars.

The Brooklyn Heights Railroad, New York, has issued specifications for 125 cars for the electric street lines of that company in Brooklyn, N. Y.

The Chicago, Burlington & Quincy has let contracts 75 stock cars to the Michigan-Penninsular Car Co., and for 250 stock cars to the Wells & French Car Co.

The car shops of the Pennsylvania, at Fort Wayne, Ind., have completed 175 gondola cars, and this week commenced the building of 25 dairy product and 10 large furniture cars.

The Wagner shops at Buffalo have just completed two compartment cars to run on the Chicago & Northwestern. The design of the car is in many respects novel, and the interior decorations are exceedingly tasteful; the cars are thought to excel in beauty any cars of this type heretofore built at the Wagner shops and the company's officers take considerable pride in them. Each car has 10 compartments, any two of which may be connected by means of a sliding door. The upholstery is of plush in olive and Nile green, terra cotta and rose. The partitions are covered with silk tapestry, and the berth fronts and other parts of the compartments are of costly woods, hand polished, notably satin wood, Persian walnut, South American mahogany and oak, with bronze and brass trimmings. Marquetry and inlaid work is much used where it has been customary to use mirrors. Each compartment is provided with an individual lavatory of new design. The head lining of the passageway, that extends along two-thirds of the entire length of the car, is of mahogany in natural finish, and arched to its full width. The window curtains are of heavy silk velour. The woodwork, upholstery and general finish of each compartment is distinctive.

BRIDGE BUILDING.

Baltimore, Md.—The Baltimore & Ohio has let contracts for the superstructures of four new bridges, and contemplates awarding contracts for a number more in the near future. Of the four given, the Pennsylvania Steel Co., Steelton, Pa., received one for a steel viaduct 480 ft. long and about 100 ft. high on the Metropolitan Branch. The Edge Moore Bridge Works got the contracts for the other three. One of these is a 129 ft. through triangular span truss over the South Branch of the Potomac, another is of two spans, 160 ft. each, over the Potomac, and the third is one of two 89 ft. spans over the Big Yough. At present the Pencoyd Iron Works have four bridges under construction for the company.

Boyd's, Md.—The Baltimore & Ohio is building a bridge across the Little Seneca near this place. The cost will be over \$100,000. Bennett & Talbot are the contractors for masonry.

Cleveland, O.—The Director of Public Works has been authorized by the City Council to advertise for proposals for building a wagon and footbridge on Seneca street over the tracks of the C. & P. and the L. S. & M. S. railroads from Seneca street extension to Lake Erie, with the necessary foundations and approaches.

Connellsville, Pa.—It is proposed to build a bridge over the Ravine at Trumps Run.

Cumming, Ga.—Bids are asked until July 25 for building a two-span steel bridge over the Chattahoochee River at Stickland's Ferry. Address H. L. Hawkins, Ordinary.

Dauberville, Pa.—The Grand Jury having reported favorably, a new bridge will be erected over Irish Creek at this place.

Fredericton, N. B.—The Board of Works has completed plans for a new bridge to be built at St. Joseph at a cost of \$20,000.

Gettysburg, Pa.—The County Commissioners are advertising for bids for building a high-truss iron or steel bridge across the Bermudian, above Good Intent Factory, on the line of Huntington and Tyrone townships, the span to be 75 ft.

Jersey City, N. J.—It is said that the Street and Water Board proposes to rebuild the Pacific Avenue bridge at a cost of \$12,000.

Kansas City, Kan.—A steel and wrought-iron three-span bridge is to be built across the Kansas River by the Metropolitan Street Railway Co. in place of the old structure at Central avenue. It is said that it will be double decked, the upper being for use of the company and the lower for general purposes.

Little Rock, Ark.—Bids will be received at the office of the County Judge on July 15, for the construction of a highway bridge across the Arkansas River at Main street, in this city. W. A. Compton is County Judge.

New York.—The New East River Bridge Commissioners of New York decided at their meeting on Wednesday, the 17th, on the New York and Brooklyn terminals. In New York the terminals will include two blocks east and west between Norfolk street and Clinton street and one block north and south between Broome and Delancey. From this plaza the approach runs easterly parallel with Delancey street and just south of it. A description of the New York sites proposed, with some statement of the arguments pro and con, appeared in the *Railroad Gazette* of June 12, page 414. The Brooklyn terminal occupies the ground between Broadway and South Fourth street north and south, and between Driggs avenue and Havemeyer street east and west.

Norristown, Pa.—The following bids were opened June 17, for the superstructure of the bridge over Stony Creek at Airy street: Pencoyd Iron Works, Philadelphia, \$22,776; Phoenix Bridge Co., Phoenixville, Pa., \$23,700; Groton, (N. Y.) Bridge Co., \$22,425; Massillon, (O.) Bridge Co., \$29,780; Penn Bridge Co., Beaver Falls, Pa., \$23,980; John Denithorne & Son, Phoenixville, Pa., \$23,244.77; Berlin Iron Bridge Co., \$26,000; Maryland Steel Co., \$21,497; King Bridge Co., \$24,600; Nelson & Buchanan Chambersburg, Pa., \$25,373; Horseheads (N. Y.) Bridge Co., \$24,969.

For the masonry the bids were Sparks & Evans, Philadelphia, first class, \$8,350; second class, \$3,128; Todd & Comfort, second class, \$3,128; Jones & Wallace, Philadelphia, first and second class combined, \$12,970. The contract was awarded to Sparks & Evans for first class work and Todd & Comfort for the second class.

The following bids for four smaller bridges were also opened, but the award of the contracts is being held for consideration.

For iron-work on bridge over Wissahickon, in White-mars: Groton Bridge Co., \$1,330; Benner & Opyke, \$1,655; Massillon Bridge Co., \$1,125; Penn Bridge Co., \$1,350; Denithorne & Son, \$1,114; Berlin Bridge Co., \$1,650; Horseheads Bridge Co., \$1,610; King Bridge Co., \$995; Masonry—James Walsh, \$995; Todd & Comfort, \$983; Jones & Wallace, \$2,200.

For the iron-work of bridge over the northeast branch of Perkiomen, in lower Salford Township: Groton Bridge Co., \$1,825; Benner & Opyke, \$2,518; Massillon Bridge Co., \$1,752; Penn Bridge Co., \$1,900; Denithorne & Son, \$1,697; Berlin Iron Bridge Co., \$2,160; Horseheads Bridge Co., \$2,140; King Bridge Co., \$1,558; Masonry—John M. Smith, \$1,792.

Iron-work on bridge over Towamencin creek in Towamencin township: Groton Bridge Co., \$944; Benner & Opyke, \$1,308; Massillon Bridge Co., \$879; Denithorne & Son, \$850; Berlin Iron Bridge Co., \$1,229; Horseheads Bridge Co., \$1,120; King Bridge Co., \$800; Masonry, James Walsh, \$951.

For iron-work on bridge, Zacharias Creek, in Shippack: Groton Bridge Co., \$835; Benner & Opyke, \$1,037; Massillon Bridge Co., \$689; Denithorne & Son, \$701; Berlin Bridge Co., \$1,090; Horseheads Bridge Co., \$985; King Bridge Co., \$665; Masonry—Todd & Comfort, \$1,690; James Walsh, \$1,131.

Pottsville, Pa.—The Groton (N. Y.) Bridge Co. has been awarded the contract for an iron bridge in Mahanoy township for \$695. Other bids were: J. B. Ulrich, Tamaqua, \$700; Nicholas Brenner, Pinegrove, \$745; R. A. Simmons, Pottsville, \$901.85.

Reading, Pa.—The court has ordered the County Commissioners to erect a new bridge across the Schuylkill at Berne, at an estimated cost of \$16,000. It has also ordered the Commissioners to have the bridge across the Schuylkill near Brownsville rebuilt, the estimated cost being between \$15,000 and \$16,000. The old bridge is at present propped up at three different places, and is in a dangerous condition.

St. Joseph, Mo.—The Youngstown (O.) Bridge Co.

has been awarded the contract for building a bridge across Blacksnake creek, the price being \$1,455.

Silver City, Idaho.—Plans and specifications are asked until July 6, with bids for construction of a wagon bridge across Jack's Creek, in Little Valley, Owyhee County, to replace the one washed away in 1894. E. L. Ballard, Clerk.

Twin Bridges, Mont.—The County Commissioners have awarded a contract to the King Bridge Co. of Cleveland, O., for building the new three-span bridge, resting on steel tubular piers, across the Jefferson River at Gaylord for \$7,491.

RAILROAD LAW—NOTES OF DECISIONS.

Carriage of Goods and Injuries to Property.

In Illinois the Supreme Court rules that liability for loss by defects in a refrigerator car cannot be avoided by a provision in the bill of lading that the company should not be liable "for decay of perishable articles, or injury by heat or frost," since, by agreeing to use a refrigerator car, it is especially agreed to protect the goods from heat.¹

In the District of Columbia goods were shipped to plaintiff over the E. Ry. The agent at plaintiff's station told plaintiff on several occasions, in reply to his inquiries, that the goods had not arrived, but plaintiff himself found them in the station, but too late in the day to remove them. Before he could remove them the station and goods were burned. The Supreme Court holds that the negligent failure to deliver the goods was the cause of their loss, and the railroad company was liable.²

The Supreme Court of Minnesota holds that a carrier, the last of several connecting carriers, who delivered the goods at their destination to one other than the consignee, by reason of erroneous directions given him by an intermediate connecting carrier, without authority of either consignor or consignee and without surrender of the bill of lading issued by the initial carrier, was liable for conversion.³

In California it is held that where goods consigned on commission are received by a railroad company to be carried beyond its own route, under an agreement between the connecting companies by which each company is entitled to a proportion of the freight, the company which carries the goods to their destination is liable to the consignor for a delivery to a person not authorized to receive them.⁴

In Michigan it is held that a person turning his horse on the highway adjoining unfenced depot grounds is guilty of contributory negligence preventing his recovery for the killing of the horse by a train of the railroad company.⁵

The Supreme Court of Minnesota rules that a condition in a bill of lading providing that the amount of loss or damage incurred by the carrier is to be computed at the value of the property at the time and place of shipment, and wholly failing to provide for restitution of the amount which may have been paid by the consignee as freight charges, is invalid.⁶

The Code of California provides that a carrier may reduce his liability to that of a warehouseman as to goods which have arrived at the place of consignment by giving notice to the consignee of the arrival. The Supreme Court holds that a notice served at the building in which the consignee does business, on a person other than the consignee, does not affect the carrier's liability, though the person who received the notice represented that he was the consignee.⁷

In Alabama it is held that a stipulation, in a bill of lading for the shipment of money by an express company, that the company shall in no event be liable for any loss unless a claim therefor is made in writing within 32 days from the date of the shipment contract, is void, as being unreasonable.⁸

In Kansas it is held that where stock trespassing on an inclosure went from there to the right of way of a railroad company, and were killed, their owner was entitled to no greater rights than the owner of the inclosure would have had had the stock been his.⁹

In Michigan the Supreme Court rules that grounds at a flag station at which trains are regularly stopped whenever there are passengers, freight or express to be taken, though no depot building is erected thereon, are depot grounds, which the railroad company is not required to fence.¹⁰

Injuries to Passengers, Employees and Strangers.

In New York the plaintiff purchased a ticket and obtained leave to stop over until next day at an intermediate station. He also requested that his baggage be unloaded there, but this was not assented to and it was carried through to the point of destination named in the ticket, where it was taken charge of, pursuant to law, by the customs officers of the United States, and while in their custody was destroyed by fire. The Supreme Court holds that the road was not liable for loss.¹¹

In North Carolina one A, while calling to receive his baggage, was shot by the depot agent on account of abusive language used by decedent to the agent. The Supreme Court rules that a finding by the jury that the agent was acting in the line of his duty, so as to render the company liable for A's death, will not be disturbed.¹²

In Texas it is held that a railroad which employs a policeman at a depot to look after passengers, is liable to a passenger for loss of an eye, caused by the policeman striking him with a billy, the passenger having after being roused from a drunken sleep, and started to his train, merely attempted to come back into the depot.¹³

In Kentucky it is held that a railroad whose conductor allows an intoxicated white passenger to enter or remain in a coach reserved for colored persons is responsible for his conduct while there, and is liable in damages to a passenger in such coach to whom he uses obscene or indecent language, or whom he otherwise maltreats.¹⁴

In the Federal Court it is held that a "track foreman" in the employ of a railroad, who, by the rules of the company, is required to report to the supervisor, and receive his instructions as to all his work; who can only suspend or discharge the men in his gang temporarily, and subject to the approval of the supervisor; who follows minute directions as to the use of the track in his work; and who works with the men forming the gang under his charge—is a fellow servant of the members of such gang, who assumes the risks of injury by his negligence.¹⁵

The Supreme Court of Minnesota holds that one employed by a railroad company in stock yards, whose duty was to step from a high platform to the tops of cars as they came opposite, and pull bundles of hay on them from the platform, and who was injured through obeying the directions of the conductor of the train, under whose direction the hay was so loaded, to step from the platform to the top of a car passing at too great a rate of speed to enable him to step to it with safety, which fact was unknown to him by reason of inexperience and of the darkness, was injured through exposure to the

hazards of railroading within the statutes relating to fellow servants.¹⁶

In the same state it is held that a wiper in a round-house, injured, while assisting in coaling an engine, by the engine's being negligently moved by a co-employee, was injured by reason of exposure to the hazards of railroading, within the law relating to fellow servants.¹⁷

In Montana it is ruled that both the conductor and engineer of a train are the superiors of a brakeman on the same train, within the meaning of the statute providing that "the liability of the corporation to a servant or employee acting under the orders of his superior shall be the same in case of injury sustained by default or wrongful act of his superior or to an employee not appointed or controlled by him, as if such servant or employee were a passenger."¹⁸

In Michigan it is held that as it is the duty of a railroad to furnish trainmen with a reasonably safe track, a sectionman, whose duty it was to keep the track in condition, is not a fellow servant with a brakeman upon a freight train.¹⁹

The Supreme Court of Kansas decides that in an action by a brakeman against a railroad for injuries received in coupling cars on a dark night through failure of the lantern furnished him by the company to give proper light, where the evidence showed that the lantern smoked the globe and did not give good light, plaintiff's inability to specify the particular defect which caused the lantern to smoke did not prevent a recovery.²⁰

In Wisconsin it is held that under the statute declaring a railroad company liable for damages to an employee caused by the negligence of a "train despatcher, telegraph operator, superintendent, yard master, conductor or engineer, or of any other employee, who has charge or control of any stationary signal, target point, block or switch," the word "superintendent" applies only to one having to do with the movement of trains and cars and does not include the foreman of a repair shop.²¹

The Supreme Court of Arkansas holds that one employed by a railroad as foreman over a crew whose duty it is to repair bridges and trestles, and who, for such purpose, is supplied by the company with cars in which he boards the crew, the company moving the cars as required, is a fellow servant of the engineer of a train which collides with one to which his cars are attached, and he cannot recover for personal injuries received.²²

In Texas it is held that a car repairer, working in a separate yard from a "hostler," is not a fellow servant of such hostler, nor of the switchmen in such other yard, particularly while on a car under orders to proceed to another place and assist in repairing damages caused by a wreck.²³

The New York Court of Appeals decides that the fact that a rule leaves it to the judgment of a freight conductor whether he shall take a train over the summit of a steep grade as it is made up, or whether he shall detach a part, or call for extra help, does not make him a vice principal, for whose negligent performance of such duty a brakeman injured thereby can recover from the company.²⁴

The Supreme Court of Missouri rules that one who, going to a depot walked in the space on a double-tracked railroad, between the two tracks, with an umbrella over her head, so near one of the tracks as to be struck by a train coming back of her, does not show such negligence on her part as to justify the taking of the case from the jury, there being evidence that those in charge of the train knew that people were in the habit of walking between the tracks at that point, and that they did not use proper means to prevent the accident after they saw, or by ordinary care should have seen, her peril.²⁵

In North Carolina it is the duty of an engineer on a moving train to maintain a reasonably vigilant outlook on the track in front, not only in towns and at public crossings, but all along the line.²⁶

In Arkansas the Supreme Court holds that an electric street railway company is jointly liable with one who has negligently allowed his telephone wire to drop across the company's trolley wire for injuries to a third person, accidentally coming in contact with it, by the current of electricity conveyed through it from the trolley wire.²⁷

In New York in an action against a railroad for personal injuries, it appeared that, at a crossing, plaintiff's foot caught in the track, and he was unable to extricate it; that he was struck by a passing train; and that the only thing that would have saved him would have been to stop the train. The Supreme Court rules that defendant was not negligent, even if no signal were given of the approach of the train.²⁸

In Indiana it is held that one who drives his horse in a trot against a passenger train at a crossing with which he is familiar, and where he could have seen the approaching train at any time after he was within 75 yards of the crossing, cannot recover for the damages caused by the collision.²⁹

In New York it is held that one voluntarily exposing himself to danger at a railroad crossing is guilty of contributory negligence, though the exposure was made to save his cattle from injury.³⁰

In Indiana in an action for injuries to a 12-year old child at a public crossing, it appears that the train was being run at a negligent rate of speed, but that the bell was rung and whistle blown as it approached the crossing; that plaintiff, when within five feet of the track, could have seen the train approaching. The Supreme Court rules that the plaintiff was guilty of contributory negligence.³¹

In New York, plaintiff, while crossing defendant's track at night, was struck by a train which was moving backward. Plaintiff was driving at a trot a wagon which made a great deal of noise, but he did not stop to listen for cars, though he knew that trains were often moved backward over the crossing. The Supreme Court rules that plaintiff was guilty of contributory negligence.³²

In Texas, while a freight train was passing a crossing, deceased waited in his wagon; and, when the last car had passed, he started to cross the track, when he saw an engine which was following the train. There was evidence that the engine gave no signal of its approach. When deceased saw it, he rose to his feet, and was thrown to the track from the back of the wagon, and run over by the engine. The Supreme Court holds that deceased was not shown to have been guilty of contributory negligence.³³

In Missouri it is held that where a train is running through a populous neighborhood, just outside the city limits, where laborers have for years been accustomed to use the tracks in going to their work, and the employees on the train see, or, by the exercise of ordinary care, may see, a person on the track in time to avoid a collision, but fail to use such care, the company will be liable, though the person injured is guilty of contributory negligence.³⁴

In Wisconsin the Supreme Court rules that in an action against a railroad for being put off a freight train which plaintiff had boarded as a passenger with a ticket, believing that it was his train, it is proper to instruct that it is the duty of passengers to inquire

whether a given train stops at their station, and the duty of trainmen to warn passengers not to board or remain on wrong trains.³⁵

- ¹C. & A. v. Davis, 42 N. E. Rep., 582.
- ²Central Trust Co. v. E. T. V. & G., 70 Fed. Rep., 764.
- ³Foy v. C. M. & St. P., 65 N. W. Rep., 627.
- ⁴Cavallaro v. T. & P., 42 Pac. Rep., 918.
- ⁵Schneekloth v. C. & W. M., 65 N. W. Rep., 633.
- ⁶Shea v. Minn., St. P. & S. S. M., 65 N. W. Rep., 458.
- ⁷Cavallaro v. T. & P., 42 Pac. Rep., 918.
- ⁸Southern Exp. Co. v. Bank of Tupelo, 18 South Rep., 661.
- ⁹Rouse v. Osborne, 42 Pac. Rep., 813.
- ¹⁰Schneekloth v. C. & W. M., 65 N. W. Rep., 663.
- ¹¹Howell v. G. T. Ry. Co., 35 N. Y. S., 514.
- ¹²Daniel v. Petersburg, 23 S. E. Rep., 327.
- ¹³T. & P. v. Bowlin, 32 S. W. Rep., 918.
- ¹⁴Quinn v. L. & N., 32 S. W. Rep., 742.
- ¹⁵Deavers v. Spencer, 70 Fed. Rep., 480.
- ¹⁶Leier v. Minn. Belt, 65 N. W. Rep., 269.
- ¹⁷Mikkelsen v. Truesdale, 65 N. W. Rep., 260.
- ¹⁸Crisswell v. Mont. Cent., 42 Pac. Rep., 767.
- ¹⁹Balhoff v. A. M. C., 65 N. W. Rep., 592.
- ²⁰A. T. & S. P. v. Lanning, 42 Pac. Rep., 313.
- ²¹Hartford v. N. P., 64 N. W. Rep., 1033.
- ²²St. L. S. W. v. Henson, 32 S. W. Rep., 1079.
- ²³S. A. & A. P. v. Keller, 32 S. W. Rep., 847.
- ²⁴Wooden v. W. N. Y. & P., 42 N. E. Rep., 190.
- ²⁵Kreis v. M. P., 33 S. W. Rep., 61.
- ²⁶Pickett v. W. & W., 23 S. E. Rep., 264.
- ²⁷City Electric St. Ry. Co. v. Connerly, 33 S. W. Rep., 426.
- ²⁸Bosko v. Delaware, L. & W., 36 N. Y. S., 261.
- ²⁹Enger v. Ohio & M., 42 N. E. Rep., 217.
- ³⁰Morris v. L. & M. S., 42 N. E. Rep., 579.
- ³¹Shirk v. Wash., 42 N. E. Rep., 656.
- ³²Judson v. C. V., 36 N. Y. S., 83.
- ³³Int. & G. N. v. Sein, 33 S. W. Rep., 558.
- ³⁴Chamberlain v. M. P. Ry. Co., 33 S. W. Rep., 437.
- ³⁵Boehm v. D. S. S. & A., 65 N. W. Rep., 506.

MEETINGS AND ANNOUNCEMENTS.

Dividends.

Dividends on the capital stocks of railroad companies have been declared as follows:

- Boston, Revere Beach & Lynn*, semi-annual, 1 per cent., payable July 1.
- Chicago & Eastern Illinois*, quarterly, 1½ per cent., payable July 1.
- Chicago, Rock Island & Pacific*, 50 cents per share, payable Aug. 1.
- Canada Southern*, 1½ per cent., payable Aug. 1.
- Chicago & Western Indiana*, quarterly, 1½ per cent., payable July 1.
- Lake Shore & Michigan Southern*, 3 per cent., payable Aug. 1.
- Maine Central*, quarterly, \$1.50 per share, payable July 1.
- Michigan Central*, 2 per cent., payable Aug. 1.
- Minneapolis & St. Louis*, semi-annual, 2½ per cent. on the first preferred stock and 1½ per cent. on the second preferred stock, payable July 15.
- New York Central & Hudson River*, quarterly, 1 per cent., payable July 15.
- New York, New Haven & Hartford*, quarterly 2 per cent., payable June 30.
- Norfolk & Southern*, quarterly, 1 per cent., payable July 10.
- Northern Central*, semi-annual, 3 per cent. on capital stock, payable July 15.

Stockholders' Meetings.

Meetings of the stockholders of railroad companies will be held as follows:

- New York & Harlem*, special, Grand Central station, New York City, July 15.
- Saginaw Valley & St. Louis*, annual, company's office, St. Louis, Gratiot County, Mich., July 8.
- Saginaw & Western*, annual, Alma, Gratiot County, Mich., July 8.

Technical Meetings.

Meetings and conventions of railroad associations and technical societies will be held as follows:

- The *American Street Railway Association* will hold its annual convention at St. Louis on Oct. 24 and 25.
- The *Roadmasters' Association of America* will hold its next annual meeting at the Cataract Hotel, Niagara Falls, N. Y., beginning Sept. 8.
- The *American Society of Civil Engineers* will hold its annual convention at San Francisco, from June 29 to July 3.
- The *Traveling Engineers' Association* will hold its next annual meeting at Minneapolis, Minn., commencing Sept. 8.
- The *Roadmasters' Association of America* will hold its next annual convention at Niagara Falls, beginning on Sept. 8.
- The *Railway Signalling Club* will meet on the second Tuesday of the months of January, March, May, September and November, in Chicago. Mr. George M. Basford, is secretary, The Rookery, Chicago.

The *Western Railway Club* meets in Chicago on the third Tuesday of each month, at 2 p. m.

The *New York Railroad Club* meets at the rooms of the American Society of Mechanical Engineers, 12 West Thirty-first street, New York City, on the third Thursday in each month, at 8 p. m., except in June, July and August.

The *New England Railroad Club* meets at Westeyan Hall, Bromfield street, Boston, Mass., on the second Tuesday of each month.

The *Central Railway Club* meets at the Hotel Iroquois, Buffalo, N. Y., on the second Friday of January, March, May, September and November, at 2 p. m.

The *Southern and Southwestern Railway Club* meets at the Kimball House, Atlanta, Ga., on the third Thursday in January, April, August and November.

The *Northwestern Railroad Club* meets at the Ryan Hotel, St. Paul, on the second Tuesday of each month, at 8 p. m.

The *Northwestern Track and Bridge Association* meets at the St. Paul Union Station on the Friday following the second Wednesday of March, June, September and December, at 2.30 p. m.

The *American Society of Civil Engineers* meets at the House of the Society, 127 East Twenty-third street, New York, on the first and third Wednesdays in each month, at 8 p. m.

The *Western Society of Engineers* meets in its rooms on the first Wednesday of each month, at 8 p. m., to hear reports, and for the reading and discussion of papers. The headquarters of the Society are at 1736-1739 Monadnock Block, Chicago.

The *Engineers Club of Philadelphia* meets at the House of the Club, 1122 Girard street, Philadelphia, on the first and third Saturdays of each month, at 8 p. m., except during July and August.

The *Boston Society of Civil Engineers* meets at 715 Tremont Temple, Boston, on the third Wednesday in each month, at 7.30 p. m.

The *Engineers' Club of St. Louis* meets in the Missouri Historical Society Building, corner Sixteenth street and Lucas place, St. Louis, on the first and third Wednesdays in each month.

The *Engineering Association of the South* meets on the second Thursday in each month, at 8 p. m. The Association headquarters are at The Cumberland Publishing House, Nashville, Tenn.

The *Engineers' Society of Western Pennsylvania* meets in the Carnegie Library Building, Allegheny, Pa., on the third Tuesday in each month, at 7.30 p. m.

The *Technical Society of the Pacific Coast* meets at its rooms in the Academy of Sciences Building, 819 Market street, San Francisco, Cal., on the first Friday in each month, at 8 p. m.

The *Association of Engineers of Virginia* holds informal meetings on the third Wednesday of each month, from September to May, inclusive, at 710 Terry Building, Roanoke, at 1 p. m.

The *Denver Society of Civil Engineers* meets at 36 Jacobson Block, Denver, Col., on the second Tuesday of each month except during July and August.

The *Montana Society of Civil Engineers* meets at Helena, Mont., on the third Saturday in each month, at 7.30 p. m.

The *Engineers' Club of Minneapolis* meets in the Public Library Building, Minneapolis, Minn., on the first Thursday in each month.

The *Canadian Society of Civil Engineers* meets at its rooms, 112 Mansfield street, Montreal, P. Q., every alternate Thursday, at 8 p. m.

The *Civil Engineers' Club of Cleveland* meets in the Case Library Building, Cleveland, O., on the second Tuesday in each month, at 8 p. m. Semi-monthly meetings are held on the fourth Tuesday of each month.

The *Engineers' Club of Cincinnati* meets at the rooms of the Literary Club, No. 24 West Fourth street, Cincinnati, O., on the third Thursday in each month, at 7.30 p. m. Address P. O. Box 333.

The *Engineers' and Architects' Club of Louisville* meets in the Norton Building, Fourth avenue and Jefferson street, on the second Thursday each month at 8 p. m.

The *Western Foundrymen's Association* meets in the Great Northern Hotel, Chicago, on the third Wednesday of each month. S. T. Johnston, Monadnock Block, Chicago, is secretary of the association.

The *Engineers' Club of Columbus, (O.)*, meets at 12½ North High street, on the first and third Saturdays from September to June.

The *Engineers' and Architects' Association of Southern California* meets each third Wednesday of the month in the Hall of the Chamber of Commerce, Los Angeles, Cal.

The *Engineers' Society of Western New York* holds regular meetings the first Monday in each month, except in the months of July and August, at the Buffalo Library Building.

The *Civil Engineers' Society of St. Paul* meets on the first Monday of each month, except June, July, August and September.

The *Engineers' Society of Western New York* meets on the first Monday of each month at the Society's rooms in the Buffalo Library.

Engineers' Club of St. Louis.

The club met June 17, 12 members and four visitors present. Mr. F. F. Harrington, of the City Testing Department, then read a paper on "Experiments on Vitrified Paving Brick."

Messrs. Holman, Freeman, Flad, Kinealy, Wheeler, Crosby and Barth took part in the discussion. Mr. Holman explained a testing machine which he had just designed for the St. Louis testing department.

American Society of Civil Engineers.

On Monday evening of this week about 30 members of the society left for San Francisco on one of the regular trains of the New York Central to attend the annual convention of the society from June 29 to July 3. The programme is in part as follows: Monday, June 29, 10 a. m., the opening session of the convention at the Hall of the Academy of Sciences. The second session is to take place in the afternoon, at which time will be presented for discussion some of the papers of the convention and also the business meeting of the society will be held. On Tuesday, June 30, at 8 p. m., the President, Thomas Curtis Clarke, will deliver the annual address. A number of interesting trips and excursions have been arranged for the members and guests who attend. The following papers presented by members of the society have been accepted for presentation at the convention:

"Flow of Water in Wrought and Cast Iron Pipes from 28 to 42 in. in Diameter," by Isaac W. Smith.

"A Water Power and Compressed Air Transmission Plant for the North Star Mining Company, Grass Valley, Cal.," by A. D. Foote.

"The Condition of Steel in Bridge Pins," by A. C. Cunningham.

"Improving the Entrance to a Bar Harbor by a Single Jetty," by Thomas W. Symons.

"The Construction of a Light Mountain Railroad in the Republic of Colombia," by L. J. Chibas.

Engineers' Club of Philadelphia.

The regular semi-monthly meeting of the Engineers' Club of Philadelphia, was held on June 6, 1896, President Falkensee in the chair. The paper of the evening was presented by Mr. Rudolph H. Klauder, on the subject of "Electric Storage Batteries." The fundamental cause of the heretofore stagnated condition of the electric storage-battery industry in this country he believed was due to the unfortunate results of protracted patent litigation. After speaking of the lead accumulator of Planta in 1860 and the improvement of Faure in 1880, he remarked that the chloride plate, which is a modification of this type, is in use in a large majority of the batteries in this country to-day. The principal point touched upon in the paper was in regard to the use of storage batteries in central station practice. In the load of city trolley stations there is a morning and evening "peak" due to the great volume of travel at those times, while in lighting stations the "peak" occurs only in the evening. Sufficient capacity must be provided in the station to carry its maximum load, but as this usually exists only for two or three hours each day and is large compared with the mean load, we have to face the problem of preventing a large proportion of the machinery lying idle the greater part of the day. The function of the battery will be to take the place of another generator to supply at the period of maximum demand the current with which it has been charged during the less busy part of the day. Mr. Klauder then showed a curve to illustrate the method of making calculations to determine the most economical and efficient equipment of dynamos and batteries for a typical station. Messrs. James Christie, E. R. Keller, William C. Eglin, members of the club, and Mr. J. Appleton, a visitor, took part in the discussion after the paper had been presented.

PERSONAL.

—Mr. Wm. P. Palmer has been elected Second Vice-President of the Illinois Steel Company, vice Mr. Robert Forsyth, resigned. His duties will be to look after the commercial interests of this company.

—Mr. John P. Ramsey, Engineer of Maintenance of Way of the Peoria & Pekin Union road, has resigned that office and it is stated has become Chief Engineer of a new road now being surveyed in Northern Mexico.

—Mr. J. K. Hammond has been appointed Engineer of the Peoria & Pekin Union road and succeeded to the duties of Mr. Ramsey, formerly Engineer of Maintenance of Way, that office having now been abolished.

—Mr. W. B. Thomas has resigned as Commissioner of the Southern States Passenger Association, his resignation taking effect on July 1. Mr. Thomas was appointed to this office in October last. He was previously General Manager of several roads in Georgia.

—Mr. Sol Haas has been elected President of the Sloss Iron Co., of Alabama, in place of the late Thomas Siddon. Mr. Haas was formerly Traffic Manager of the Richmond & Danville, and more recently assistant to President Spencer, of the Southern Railway.

—Mr. George S. Edgell, for some time President of the Long Island road, has been elected Second Vice-President of that company. He is a son-in-law of the late Austin Corbin, formerly President of the Long Island Railroad, and has recently been elected to offices in other corporations formerly held by Mr. Corbin.

—Mr. Horace Tucker has been appointed Traffic Manager of the Chicago, Hammond & Western road which was recently organized to build a belt line at Chicago. Mr. Tucker is an experienced railroad officer and was for nearly 30 years connected with the Illinois Central. He was General Traffic Agent for 15 years until 1892. During the World's Fair he was Superintendent of Admissions of the Exposition.

—Mr. J. S. Dean has been appointed Superintendent of the main line of the St. Louis, Vandalia & Terre Haute between Indianapolis and St. Louis. He succeeds Mr. H. I. Miller, who has been made General Superintendent. Mr. Dean has been recently Trainmaster of the Pittsburgh Division of the Pennsylvania lines, of which Mr. Turner was Superintendent before his promotion to be Vice-President of the Vandalia.

—Mr. S. B. Fisher has been appointed Chief Engineer of the Missouri, Kansas & Texas road. He has been Acting Chief Engineer since the death of Mr. C. A. Wilson last year. Mr. Fisher went to the Missouri, Kansas & Texas in 1895. He was previously Chief Engineer of the Everett & Monte Cristo road in Washington, having charge of its construction. He has been Chief Engineer of the Milwaukee & Northern and of the Minneapolis, St. Paul & Sault Ste. Marie.

—Mr. Garrett A. Hobart, the Republican nominee for Vice-President of the United States, has long been actively connected with railroads and other corporations and is at present a member of the Board of Arbitration of the Joint Traffic Association. A portrait, with a sketch of his life, was printed in the *Railroad Gazette* of May 15. He was Receiver of the New Jersey Midland about six years and President of the reorganized road for a short time. He was also Receiver of the New York & Greenwood Lake until its reorganization and later he served in the same capacity for the Jersey City & Albany and the Montclair roads.

—Mr. Edwin M. Winter, General Manager of the Chicago, St. Paul, Minneapolis & Omaha, has been selected by the Northern Pacific Reorganization Committee to be President of the reorganized company. His headquarters will continue to be in St. Paul. Mr. Winter has been with the Chicago, St. Paul, Minneapolis & Omaha since 1876. He was born in Vermont in 1845, and entered railroad service in 1867. His first work was in the construction department of the Union Pacific, where he remained for about three years. Subsequently he was a contractor's agent for construction work on various railroads, and in 1876 became General Claim Agent for the Chicago & Northwestern. He held the last-mentioned position until 1876 when he became General Superintendent of the West Wisconsin, retaining that office when the consolidated company was formed in 1879. He has been General Manager since 1885 and is also a director. It is expected that Mr. Winter will take charge of the Northern Pacific road within a few weeks.

Mr. Winter is a man of singular force of character and of untiring zeal and industry. As a railroad man he is not only a master of details, but he is accustomed to take broad and comprehensive views of the relations of the railroads to each other, to their patrons and to the nation. We are bound to think that the Northern Pacific is fortunate in securing the services of a man so able, so proficient and so judicious.

ELECTIONS AND APPOINTMENTS.

Charleston & Western Carolina.—The incorporators of this company, which succeeds the Port Royal & Western Carolina road, are as follows: Thomas F. Ryan and Samuel Thomas, of New York; Henry Crawford, of Chicago; John B. Cleveland, of Spartanburg, S. C.; J. C. Fleming, of Laurens, S. C.; J. A. Brock, of Anderson, S. C.; D. A. P. Jordan, of Greenwood, S. C.; Avery Patton, of Greenville, N. C., and J. P. Doughty, of Augusta, Ga.

Chesapeake & Western.—At the annual meeting of the company, held at Harrisonburg, Va., last week, the following directors were elected: F. W. Jackson, C. W. Haskins, E. S. Rapallo, J. W. Rinehart, T. H. Bakeswell, Calvin Wells, William M. Hohlston, Ed. M. Van Buren, John A. Carling, of New York; James Clark and Garret A. Hobart, of Paterson, N. J., and J. P. Hauke, of Harrisonburg, Va.

Green Bay & Western.—The incorporators of this company, succeeding the Green Bay, Winona & St. Paul are Mark T. Cox, Morristown, N. J.; C. L. Blair, Stephen S. Palmer and William J. Wilson, New York City; William J. Hunt, Jersey City.

Houston, East & West Texas.—This road was formally transferred to James A. Blair, representing James A. Blair & Co., of New York, June 10. The following directors were elected: T. W. House, S. Allen, C. Lombardi, M. G. Howe, Henry Brashear and James A. Baker, Jr., of Houston, and James A. Blair, James Byrne and Edgar Marston, of New York. The directors elected T. W. House, President; M. G. Howe, Vice-President and General Manager; James A. Baker, Jr., Secretary, and Thomas Cronan, General Superintendent.

Kansas, Oklahoma & Southwestern.—K. H. Bartles, of Bartlesville, I. T., has been elected President of this new company in Oklahoma and the Indian Territory.

New York & Pennsylvania.—The directors of the consolidated company are: Benton McConnell, Theodore

Cobb, David N. Ramsey, William W. Rittenden and Irwin M. Near.

Pittsburgh, Chicago, Cincinnati & St. Louis.—At the annual meeting of the Board of Directors the following officers were re-elected: George B. Roberts, President; James McCrea, First Vice-President; J. T. Brooks, Second Vice-President; John E. Davidson, Third Vice-President; Joseph Woods, Fourth Vice-President; S. B. Liggett, Secretary, and T. H. B. McKnight, Treasurer. L. F. Loree was again appointed General Manager.

St. Louis & San Francisco.—The Reorganization Committee has selected the following as directors of the new company: J. Kennedy Tod, Isaac N. Seligman, J. A. Blair, E. C. Henderson, Horace Porter, Fred Strauss, of New York; Benj. P. Cheney, W. T. Hart, of Boston; Samuel C. Eastman, of Concord, N. H.; Charles S. Glead, Topeka, Kan.; Geo. A. Madill, Richard C. Kerens and Daniel B. Robinson, St. Louis.

St. Louis, Avoyelles & Southwestern.—The following appointments have been made: I. W. Sylvester, General Superintendent, in charge of operating and construction departments; W. E. Pearce, General Freight and Passenger Agent, in charge of the freight and passenger departments; and E. H. Cochran, Auditor. The road is being operated by Hugh J. Fitch, Receiver, appointed June 15.

Winona & Western.—The following officers were elected at Winona, Minn., June 15: President, H. W. Lambertson; Vice-President, V. Simpson; Treasurer, M. G. Morton; Secretary, Thomas Simpson; Directors, R. D. Core, Charles Horton and E. S. Youmens, all of Winona. This company has succeeded the Winona & Southwestern.

Wyoming & Black Hills.—V. Baker, of Cheyenne Wyo., has been elected President of this new railroad company.

RAILROAD CONSTRUCTION, Incorporations, Surveys, Etc.

Alameda & San Joaquin Valley.—This road, built to reach the coal mines in Alameda County, southwest of Stockton, Cal., was formally completed last week. The road is a very substantially-built line, 30 miles long and owned by the San Francisco & San Joaquin Coal Co., which also owns the mines reached by the new line. The heaviest grade is 92 ft. to the mile. The construction of the road was begun early in the year and its opening for traffic has been delayed by the steel drawbridge over the San Joaquin River. This is 360 ft. long with a draw of 220 ft. The opening of these mines through the building of the road is looked upon as of considerable importance in San Francisco. The supply of coal is said to be large and the quality very fair. It is said that excellent beds of clay and limestone are found along the road which would be suitable for making a good quality of cement.

Ashland & Wooster.—This company was incorporated in Ohio last week by Harold B. Camp, Charles Baird, Aaron Wagoner, William Buchtel and Thomas Walsh to build a road from Sandusky on Lake Erie through Erie, Huron, Ashland, Wayne, Stark, Tuscarawas and Harrison counties to Cadiz. The capital stock is \$100,000.

Atlanta Lumber Co.—This Texas company now owns about 23 miles of narrow-gauge road extending east of Atlanta, Tex., toward the Red River to reach the timber of the company. Recently the Kansas City, Shreveport & Gulf road has been built from Texarkana to Shreveport, La., crossing the lumber line about seven miles east of Atlanta, near Bloomberg station. It is now proposed to rebuild the seven miles of road and put down a third rail so that business can be interchanged with the Kansas City, Shreveport & Gulf road. This connection will save about 30 miles of distance from Atlanta to Shreveport over the present line, via the Texas & Pacific, through Marshall to Shreveport, by which the distance is 84 miles. By extending the line to the Red River the cotton district of that portion of the state will get an advantageous route to the Red River and via that waterway to New Orleans in competition with the present route via the Texas & Pacific, and it is very possible that such an extension will be built. M. Jacobs, of Atlanta, Tex., is President of the company owning the road.

Baltimore & Ohio.—Stewart, Forsythe, Watson & Co., contractors, of Washington, D. C., have commenced the work of straightening the "Seven Curves" of the road at Patterson's Creek, W. Va., below Cumberland.

Beatty Lumber Company.—This company, incorporated in West Virginia a few weeks ago by Azel Ford, of Hinton, W. Va.; J. C. Carpenter, J. R. Beatty and others, of Virginia, to operate an extensive lumber plant in Raleigh County, W. Va., is now building a railroad from the Chesapeake & Ohio twelve miles to connect with the lumber plant. Since beginning the road it has been decided to extend it and open it to general traffic. The line, as laid out, will leave the Chesapeake & Ohio at Glade station and follow the New River Valley to Glade Creek, thence along Glade Creek and Little Beaver Creek to Raleigh Court House. The section traversed is rich in coal and timber, and at present there is no railroad in Raleigh County.

Boise, Nampa & Owyhee.—Grading has been commenced on this road at Nampa, Idaho. It is expected that the road will be completed to Snake River by Oct. 1. The crossing will be about half a mile above Walter's Ferry. The work now being done is under contract to the Idaho Construction Co., of which J. J. McDonald, of Nampa, is Manager. Tracklaying will begin when the first six miles of grading has been completed.

Burlington & Hinesburg.—No new track laid this year by this company. About five miles were graded last year between Burlington, Vt., and Hinesburg, and the road will probably be completed this summer. Frank O. Sinclair, of Burlington, Vt., is Chief Engineer.

Butler & Pittsburgh.—Bids for the grading and masonry on the first division of this road between Butler and the Allegheny River, 31 miles, will be received until June 30, as stated last week. Bids are to be addressed to Mr. R. A. Franks, Secretary, Carnegie Building, Pittsburgh. Specifications can be secured from the Chief Engineer, Mr. F. E. House, at the same office. The grading of this 31 miles will require much heavy work and one tunnel 700 ft. long. The masonry includes seven viaducts. The details of the bridge across the Allegheny River and the line from that point to the Monongahela River have not yet been determined. The bridge will be about 3,000 ft. long and 130 ft. above the river.

Charleston & Western Carolina.—The Port Royal & Western Carolina, now controlled by Mr. Samuel Thomas and Thomas F. Ryan, of New York City, through purchase at foreclosure sale, has been reorganized under the above name. The road was sold at foreclosure in November last, having been operated by a receiver since 1893. It was formerly one of the leased lines of the Central of Georgia and extends from Augusta north to Spartanburg, 135 miles, with branches to Greenville and Anderson, 96 miles additional. It reaches Asheville and Eastern Tennessee over the Southern Railway. The present owners propose to make important improvements in the road and to extend it, but details of these matters have not yet been given to the public.

Columbia & Red Mountain.—This road, which is practically a branch of the Spokane Falls & Northern into the Trail Creek Mining Region in Southern British Columbia, is now under contract to Stuart & Welsh. It is said that the firm will ultimately have 1,000 men at work on construction, but it is not expected to complete the road before September. The line is only 15 miles long and begins at Northport, Wash., the present terminus of the Spokane Falls & Northern. The work includes an important bridge across the Columbia River, near Northport.

Denison & Northern.—It is stated that work on the extension in the Indian Territory has progressed so far that 15 miles of track has been laid and 40 miles of right of way cleared and bridges completed on 21 miles of the road. J. W. Wilson has been the engineer in charge.

Denver & Rio Grande.—It is announced that engineers of the company are now surveying at Veta pass for a standard gage line to Alamosa, the principal point in the San Luis Valley, in Southern Colorado, reached by the road. Business has increased both in freight and passenger traffic, so that the change of gage seems advisable, but no definite conclusion will be made immediately. The branch is 59 miles long, and with other narrow-gage lines gives the company a connection with Santa Fe, N. M. The standard-gaging of the line has been under consideration since February.

Detroit & Mackinac.—Track laying was begun two weeks ago on the southern extension of this road to Bay City, Mich. The extension is 37 miles long altogether and is being built under the contract of Kennedy & Campbell, of Bay City. The new line leaves the existing road at Omer and extends southwest to Bay City. About 15 miles of the grading is now completed and it is expected to finish the entire road some time in July.

Elkhart & Western.—This company has been incorporated in Indiana by J. L. Brodrick, J. R. Beardsley, S. Maxon, H. E. Bucklen and D. F. Coe, to build a road to run 10 miles long, from Elkhart County, Ind., to Cass County, Mich.

Eureka & Klamath River.—The extension of the road has been completed from Mad River to the mouth of Mad River Slough, a distance of 7½ miles. The road will be extended 3½ miles further to Samoa, opposite Eureka, Cal., with which it will connect by ferry. The line will do a general freight and passenger business. Mad River Slough will be crossed by a drawbridge. It is expected to have the road finished and in operation to Samoa within three months. This road is owned by the John Vance Mill & Lumber Co., and is standard gage. The road reaches a rich lumber region, one firm having 9,000 acres of redwood timber, and the Vance Company 10,000 acres contiguous to the road's northern terminal.

Green Bay & Western.—This company has been organized to succeed the Green Bay, Winona & St. Paul, recently sold at foreclosure to the bondholders. The new company takes over all the property of the Green Bay, Winona & St. Paul and the Green Bay, Stevens Point & Northern roads and secures a line from the Mississippi River at Winona, across Wisconsin, to Green Bay and Lake Michigan, about 215 miles, with a branch to La Crosse, about 30 miles.

Hoxie, Pocahontas & Northern.—A survey is now being made for this road between Pocahontas, in Randolph County, Ark., to connections with the St. Louis, Iron Mountain & Southern and with the Kansas City, Fort Scott & Memphis at Hoxie, Ark. The distance between the two points named is about 15 miles, and it is stated that the construction of the road will begin before next October. Maxwell Coffin, of Little Rock, is President.

Lake Dauphin Colonization.—S. Gaudaur, of Winnipeg, Man., has been awarded the contract for constructing to the 18th mile from Gladstone.

Little Kanawha Valley.—The Drake & Stratton Co. have the contract to build this road from Parkersburg, W. Va., by way of the Little Kanawha Valley, to Glenville, Gilmer County. The first 29 miles from Parkersburg to Palestine will be built this year. The work will begin as soon as the local aid, over \$200,000 of which has been subscribed, can be made available, probably by August. Parkersburg and Wood County alone have voted \$175,000 in aid. The road will open up for local trade the Kanawha Valley, which has heretofore depended upon the river entirely, and will develop the coal and timber region at the Kanawha headwaters.

Maine Shore Line.—Mr. George A. Curran, of Calais, Me., the President of this road, states that he has arranged in New York for the funds necessary to complete the construction work proposed for this season. James Mitchell, of Portland, Me., is the contractor for the entire line. It is stated that in about two weeks the work will be resumed along the line in Washington County. It is promised that the western division of the road, from the Maine Central near Franklin to Machias, will be ready for regular trains by October, and that not much later regular service can be begun on the eastern division from Calais to Eastport and Charlotte, where the Calais and Eastport lines will join the branch running up from Machias. The section between Charlotte and Machias is called the middle division of the road and may not be completed this fall.

Washington County voted to subscribe \$500,000 in aid of the railroad, taking preferred stock to that amount. One section of five miles, from Machias west toward Jonesport, was completed before Dec. 31, 1895, and upon its acceptance by the Railroad Commissioners the County Commissioners paid the sum of \$22,300.

Mexican National.—The engineers of this company have recently completed a preliminary survey through Southeastern Texas from a point on the Texas-Mexican road operated by the company (its Corpus Cristi line) north about 20 miles to Aransas Harbor, Tex. President Raoul states that no definite determination to build this line has been made. Nothing further will be done for

the present, awaiting the results of the improvements at Aransas Harbor.

Milwaukee & Lake Winnebago.—It is announced that the extension of this road to Lake Michigan, at Manitowoc, Wis., will be completed by July 1. The new line begins at Hilbert Junction on the old road, which is one of the subsidiary corporations of the Wisconsin Central system, and extends easterly to the Lake Michigan terminus at Manitowoc, a distance of 28 miles. The new road was built to give the Wisconsin Central a lake outlet. The boats of the Flint & Pere Marquette will be used to cross Lake Michigan, the eastern terminus of the boat line being at Ludington. It is stated that this route will be one of the shortest to Eastern points. The distance between Minneapolis and Buffalo via the new line is given as 879 miles as against 947 miles, the distance by the shortest present route. The Receivers of the Wisconsin Central have recently taken possession of the extension under a lease authorized by the United States Circuit Court. The road, as stated above, is not quite completed, but July 15 has been fixed as the date for formally opening the new route.

Pittsburgh & Eastern.—Twelve miles of track has been laid on this road this year from Beech Creek Junction at Mahaffey to Glen Campbell, Indiana County, Pa.

St. Johns & Atlantic.—This company secured a charter in Florida last week, with capital stock of \$100,000. The main line of the road is from Jacksonville to Burnside Beach, with branches to Arlington and Mayport, Fla. The incorporators are J. N. C. Stockton, J. M. Barrs and W. H. Baker. The road is a reorganization of the Jacksonville, Mayport & Pablo Co., now in control of Receivers.

Salt Lake & Pacific.—Watson Bros., of Salt Lake City, who had the contract for the first 10 miles of the grading out of Salt Lake City, have finished that section, and have now been ordered to continue work on the next section in Tooele County.

Santa Clara Valley.—Secretary Thayer, of the company, says that active work on the proposed road from San Jose, Cal., to Alviso will be soon begun. The road will be nine miles long, connecting San Jose with vessels to the inland towns situated on navigable streams.

Seaboard & Moosehead.—T. R. Atkinson, Civil Engineer of the railroad, has completed the working survey of the extension from Main Stream to Cambridge Village, Me., and the contract has been let to W. T. Davis, of Boston, for the construction of the line. The distance from Main Stream to Cambridge is five miles, two and a half less than by the way of Harmony Village, which was on the route first surveyed, as noted last week.

Sierra Nevada Lumber Co.—This company will shortly receive bids for the grading of a new road to be built from Truckee, Cal., at a distance of about seven miles into the timber lands, where a mill will be built.

Tennessee, Georgia & Atlantic.—This company has been organized by E. A. Richards, of Atlanta, and associates, who recently leased the Northeastern road of Georgia from the state of Georgia, which has operated it for several years past. The Northeastern road is about 40 miles long from Athens to Lula, Ga. The new company proposes to extend its line on the north and on the south. The northern extension will be from Lula to Chattanooga, about 120 miles, and the southern extension from Athens into Augusta, about 83 miles, forming a line across Georgia from Chattanooga to Augusta, and about 245 miles in length. At present the Northeastern road is only leased, but when the state legislature meets it is proposed to submit a proposition for the purchase of the road. Mr. Richards, who is the active Director, states that he has arranged in New York for funds to complete the plans outlined above. He says that the new line will be nearly 70 miles shorter between Chattanooga and Augusta than any existing line, and also shorter than the present line between Atlanta and Augusta. Among those interested in the new company are W. S. Witham, of Atlanta, President of several banks in Georgia, and Ex-Governor A. B. Cornell, of New York. The contracts for the extensions will probably be given out about Oct. 1. The appointment of an engineer has not yet been made.

Texas Midland.—The company has amended its charter providing for an extension of its road from Greenville, Tex., in a northeasterly direction to Cooper, in Delta County, and thence northerly to Paris, in Lamar County; also providing for the extension of its line now in operation from Ennis, Tex., in Ellis County, in a northwesterly direction to the city of Waxahatchie, in Ellis County. These extensions have been proposed for a long time and the surveys have been made. The northerly extension from Greenville has been recently placed under contract to the Bethune & Crane Construction Co., of St. Louis. For the present the extension will be from Commerce to Paris, instead of from Greenville, and the road will use the track of the St. Louis Southwestern between Commerce and Greenville. As soon as the extension is completed and through trains running the company will immediately begin the construction of the gap between Commerce and Greenville.

West Virginia Oil & Coal.—Since the incorporation of this road, mention of which was made in the *Railroad Gazette* last week, the stockholders have met and decided to make it an electric line. It will be about 35 miles in length, and the present plans contemplate four power houses. It will be standard gage, and will do a general freight and passenger business. Engineers left Sistersville, W. Va., last Monday to make the locating surveys.

Electric Railroad Construction.

Amherst, Mass.—The contract for building the Amherst & Sunderland Electric Railroad has been awarded to M. A. Coolidge, of Fitchburg, Mass.

Aurora, Ill.—The Aurora & Geneva Railroad Co. has been incorporated, with a capital stock of \$10,000, to build electric roads in Kane County. It is stated that the first line in the county will connect Aurora with Batavia.

Boston, Pa.—Right of way has been secured for an electric road from Boston, in Alleghany County, to Sutterville, West Newton, Mendon, Ruff's Dale, Tarr, Scottsdale and Mt. Pleasant, in Westmoreland County.

Cartersville, Mo.—The Southwest Missouri Electric Railway Co., of Cartersville, has filed a statement of increase of capital stock \$500,000 to \$650,000, and has purchased the electric railroad on Main street, in Joplin, and is now extending it to Galena, Kan., a distance of 8 miles. The company will then have a continuous

line of 23 miles, between Galena, Kan., and Cartersville, Mo. The new cars for the extension will be 40 ft. in length and vestibuled. A. H. Rogers, of Joplin, is President and General Manager of the road.

Chicago.—The Chicago General Railway Co. formally opened its line from Lawndale south to Mud Lake on June 14. It has been named the "Lawndale Avenue Line," and when completed will extend from the City Hall to the drainage canal, a distance of seven miles.

The General Electric Co. proposes to build an electric conduit railroad on Wentworth avenue, Chicago. The company will agree to pave the street from curb to curb, keep the street clean and place one electric light in the middle of each block.

Cincinnati, O.—A franchise has been granted to the Madisonville & Cincinnati Street Railway Co. to construct an electric road between Madisonville and Dela avenue, Cincinnati.

Clarksville, Tenn.—The charter of the electric railroad of Clarksville was filed on June 14. Among the incorporators are R. H. Burney, J. N. Shelton and N. L. Carney.

Clayton, Mo.—The Cross County Railroad Co. has been incorporated, with the capital stock of \$100,000, to build an electric road from Big Bend and Gorz avenue to the St. Cyr road. Among the incorporators are: Ernest P. Bell, Mark E. Lennan and Chas. Frederick.

Dedham, Mass.—The selectmen of Dedham have granted the West Roxbury & Roslindale Street Railway Co. the location asked for its line along Washington street across High street from the Boston line to Dedham Center. At Dedham connections will be made with the Norfolk Central Street Railway Co.'s line, running from that point through Norwood to East Walpole, and also with the Norfolk Suburban Street Railway Co.'s line, running to Hyde Park, Forest Hills, Dorchester, Milton Lower Mills and Readville.

Doylestown, Pa.—It is stated that the Bucks County Trolley Co. is about to let the contract for building an electric road between Doylestown and Willow Grove, a distance of about 20 miles.

Fort Wayne, Ind.—Alexander B. White, of Fort Wayne, has secured the right of way for an electric road between New Haven and Fort Wayne, a distance of six miles.

Milwaukee, Wis.—The Municipal Street Railway Co. has been organized with a capital of \$500,000 to build an electric railroad. Among those interested are G. Reuther, J. Ulrich and Aston Palm.

New York.—The Third Avenue Cable road will soon begin the extension of its line from 162d street to Kingsbridge, in the annexed district of the city, a distance of four miles. The overhead trolley system will be used. A clause in the franchise reads: "There shall be no overhead trolley south of 162d street, or north of 162d street for a longer period than 10 years after it shall first have been employed."

North Peoria, Ill.—The East Bluff Street Railroad Co. has petitioned the City Board for a franchise to extend its lines to Prospect Heights.

Oswego, N. Y.—The Oswego Street Railway Co. is building an electric road from Oswego to Fulton, a distance of about 11 miles. Three miles of track have been completed.

Reading, Pa.—G. S. W. Brubaker has been awarded the contract for the extension of Reading & Southwestern, from Reading to Mineral Springs Park.

Rockville, Conn.—Surveys are being made by the Hartford, Manchester & Rockville Railroad Co. for an electric road from Rockville to Vernon Centre, a distance of two miles.

St. Louis, Mo.—The Midland Street Railway Co. was granted a franchise on June 15 for the extension of its line from its present eastern terminus at Hanley road and Page avenue to Creve Coeur Lake.

San Francisco, Cal.—The Market Street Railway Co., which operates 97 miles of electric road, will extend its Mission street system to the county line. The new line will be in operation by October. The surveying for the route along the beach is now in progress.

Work will soon be begun on the conversion of the Geary Street Park & Ocean Railroad into an electric line.

Scituate, Mass.—The Norwell & Scituate Street Railway Co. has been organized, with a capital stock of \$22,500, to build nine miles of electric road. Among those interested are: Jonathan Hatch and Horace Fogg, of Norwell, and Henry Webb, of Scituate.

Springfield, Vt.—The Springfield Electric Railway Co. was organized June 17, with a capital stock of \$50,000, to build the road from Springfield, Vt., to Charlestown, N. H., a distance of six miles. Officers were elected as follows: Adna Brown, President, and C. F. Richardson, Treasurer.

Stroudsburg, Pa.—The contract for building the Port Jervis & Stroudsburg Electric Railroad has been given to the Southern Construction Co., of Philadelphia, which has signed articles to complete the road from Stroudsburg to Milford by July 15. The survey has been made along the Delaware River to Milford.

Toledo, O.—Surveys for the Toledo, Bowling Green & Fremont Railroad have been completed from Toledo to Bowling Green. The contracts for grading, track-laying and overhead work has been awarded to J. N. Bick, of Toledo. The maximum grade is 8 ft. per mile and the maximum curve, three degrees. Sixty-lb. rails, 60 ft. long, are being laid.

Vernon Centre, Conn.—A new survey is being made for an electric road through Vernon Centre, by the Hartford, Manchester & Rockville Railroad Co. The proposed new route will run through Vernon Centre and then north to Rockville by way of the West road and from Rockville to West station.

Warren, O.—The Mahoning Valley Electric Railway Co. has begun to double-track its line from Westlake's crossing, in Warren, to Brier Hill, in Youngstown.

Wooster, O.—Arrangements are being completed for the construction of the Wooster, Medina & Cleveland Electric Railroad. The estimated cost is \$750,000.

GENERAL RAILROAD NEWS.

Chicago & Northern Pacific.—Judge Jenkins, in the United States Court, has issued a decree for the sale of this road, the minimum price being fixed at \$10,000,000. The date of the sale is not named in the decree,

but it will be soon after Oct. 1. The Reorganization Committee of the bondholders now controls about 95 per cent. of the outstanding bonds, and will undoubtedly purchase the property at the foreclosure. This company was organized several years ago to provide Chicago terminals for the Northern Pacific when that road leased the Wisconsin Central. It now owns the Grand Central station at the corner of Harrison street and Fifth avenue, Chicago, and nearly 150 miles of track in Cook County. The track to the southern limit of Cook County is leased to the Baltimore & Ohio; that to the northwestern limit of the city is leased to the Wisconsin Central, and the western track is leased to the Chicago Great Western. The company operates a suburban line directly through its Receiver.

Cincinnati & Kentucky Southern.—This 13-mile road in Kentucky between Yosemite and King's Mountain, formerly known as the Cincinnati & Green River Road, has been sold to Joseph Joseph & Bro., of Cincinnati. The road was built some years ago by Cincinnati capitalists to secure an outlet from timber lands in Kentucky. It was sold recently to satisfy a judgment secured by the Alabama Great Southern. It is likely that the road will be abandoned and rails taken up by the present owners, although an attempt is now being made to organize a new company to operate the road.

Duluth & Winnipeg.—The foreclosure sale of this road has been fixed for July 18 at Duluth, Minn., instead of St. Paul, as fixed in the original decree. The recent decision of the Minnesota Court of Appeals, dismissing the appeal of the State Attorney-General to prevent the sale of the road, having been denied the court was able to name a definite date for the sale.

Grand Rapids, Lansing & Detroit.—In the suit of the New England Trust Company against this property a decree of foreclosure was issued last week by the United States Circuit Court at Grand Rapids, Mich. The sale is to take place on Oct. 1 next at Grand Rapids. The road is operated by the Detroit, Lansing & Northern and the decree of sale is in pursuance of the plan for the reorganization of that property. The division affected by the decree of the sale extends from Grand Rapids to Grand Ledge, Mich.

Jacksonville, Mayport & Pablo.—This company, operating a short road in northern Florida, will be succeeded by the St. Johns & Atlantic, recently organized by the interests now in control of this company.

Kings, Queens & Suffolk.—This scheme for a bicycle railroad in the eastern counties of Long Island seems to have been finally disposed of by a decision of the Appellate Division of the New York Supreme Court made last week. This decision sustains the action of the New York State Railroad Commissioners in refusing to grant the company a certificate authorizing it to proceed with the construction of the road. The Commissioners held that the projectors had failed to comply with the law relating to the organization of corporations, and that therefore the company had no legal existence, and further, that the building of the proposed railroad was not warranted by public convenience or necessity. The points made by the Commissioners were editorially discussed at some length in the *Railroad Gazette* of Jan. 31, 1896. The Commissioners were sustained in their arguments by the Supreme Court. The company proposed to build into the territory southeast of Brooklyn paralleling branches of the Long Island. It was proposed to use the bicycle locomotive of E. Moody Boynton which has a single driver and runs on one rail, being kept in position by an overhead rail and stringers.

Lake Shore & Michigan Southern.—The statement of earnings for the six months, for four years, is as follows:

	1896.	1895.	1894.	1893.
Gross earn.....	\$10,065,765	\$9,536,404	\$9,382,241	\$11,744,000
Oper. expen.....	6,811,779	6,347,268	6,183,826	8,283,206
Net earn.....	3,193,986	3,189,136	3,198,415	3,460,794
Fixed charges.....	1,680,000	1,680,000	1,680,000	1,680,000
Dividends.....	1,483,985	1,483,985	1,483,985	1,483,985
Surplus.....	29,931	25,141	34,420	296,769
Dividends.....	3.06%	3.1%	3.07%	3.6%

Louisville, Henderson & St. Louis.—This company filed in the County Court at Louisville this week a mortgage in favor of the State Trust Co., of New York, for \$2,500,000, \$1,400,000 of which is to retire old bonds, \$700,000 to pay lien holders and \$400,000 to extend the line to Louisville. The grading for this extension was done three years ago. The company now uses the tracks of the Chesapeake, Ohio & Southwestern. It was recently organized to succeed the Louisville, St. Louis & Texas.

Michigan Central.—The following statement for six months includes the earnings of the Canada Southern:

	1896.	1895.	1894.	1893.
Gross earn.....	\$6,620,000	\$6,200,000	\$6,169,000	\$7,550,000
Net earn.....	1,716,000	1,730,000	1,740,000	1,765,000
Surplus.....	516,000	530,000	540,000	560,000
Prop. to Mich. Cent.	375,000	382,000	385,000	405,000
Prop. to Can. So.....	141,000	148,000	155,000	162,000

The earnings of the Michigan Central are reported separately, as follows:

	1896.	1895.	1894.	1893.
Surplus.....	275,000	382,000	388,000	403,000
Dividends.....	374,760	375,760	374,764	374,764
Balance.....	240	7,240	13,246	28,236
To Can. So. (net).....	111,000	148,000	152,000	162,000
Dividends.....	187,520	187,500	187,500	187,500
Deficit.....	46,500	39,500	35,500	25,500

The previous surplus was \$59,000 and the present surplus is \$12,500.

New York & Pennsylvania.—The agreement of consolidation between this company and the Olean, Oswayo & Eastern under the former name, which was decided upon by the stockholders recently, has been formally filed with the state officers at Albany, N. Y. The consolidated line operates 28 miles of road from Oswayo, Pa., north to Rixville, N. Y. It is proposed to extend the line from the latter point north to Conestoga, 14 miles, reaching Hornellsville four beyond, over the track of the Erie road. A southern extension to Shinglehouse, Pa., is also proposed, both these lines being provided for in the articles of incorporation of the consolidated company.

New York Central & Hudson River.—The earnings for the three months ending June 30, partly estimated, make the following comparisons:

	1896.	1895.	1894.
Gross earn.....	\$10,770,000	\$10,494,668	\$9,915,587
Oper. expen.....	7,240,000	7,500,750	6,914,594
Net earn.....	\$3,530,000	\$2,993,918	\$3,000,993
P. c. exp. to earn.....	67%	71%	69%
Fixed charges.....	2,650,000	2,651,587	2,626,228
Balance.....	\$880,000	\$342,331	\$374,765
Dividend.....	1,000,000	1,000,000	1,175,418
Deficit.....	\$120,000	\$657,667	\$803,653

For 12 months:

Gross earn.....	\$15,562,000	\$12,489,537	\$13,678,200
Net earn.....	14,604,000	13,679,094	14,169,794
Surplus.....	31,000	D 1,217,577	D 786,310

The net earnings in the quarter ending June 30, 1896, were \$3,713,510.

Philadelphia & Reading.—Formal legal notices advertising the sale of the property of the company under foreclosure were published on Monday. Under the terms of foreclosure the sale will take place in Philadelphia on Sept. 23. The purchasers will be the reorganization managers and the reorganization of the company under the plan made public will follow.

Pittsburgh & Connellsville.—This company has entered into an arrangement with Speyer & Co. and Vermilye & Co., of New York, for the extension at or before maturity of its \$4,000,000 first mortgage bonds, due July 1, 1898, so that the principal shall become payable in 50 years from July 1, 1896, with interest payable at the rate of 4 per cent. This arrangement has been approved by the Baltimore & Ohio lessee and its receivers.

Pittsburgh, Cincinnati, Chicago & St. Louis.—The company reports earnings for May as follows:

	1896.	1895.	1894.
Gross earn.....	\$1,217,834	\$1,189,906	\$1,079,084
Oper. expen.....	925,892	974,625	950,038
Net earn.....	\$291,942	\$215,281	\$129,046
P. c. exp. to earn.....	76	81%	88
Fixed charges.....	307,331	302,374	
Deficit.....	\$15,389	\$87,193	
Net two months.....	1,257,309	1,016,728	1,081,324

Pittsburgh, Fort Wayne & Chicago.—The annual report just issued contains the following summary of improvements by the Consulting Engineer: The amount to be added to betterment for 1895, \$77,756, is about what was added in previous year, present indications are that more will be done this year, especially in adding to double track of the Western Division. Twenty-seven coaches were sold during the year, it being found that the coaches added in the Exposition year made that part of the equipment beyond the needs of the company. Eight locomotives, 169 box cars, 39 stock cars, 148 gondolas, 10 flat and 5 cabin cars were broken up and replaced with new ones. The addition to station houses, \$17,969, was for new passenger station at Clifton and freight house built at Mansfield in 1888, but not brought into the accounts until last year; \$11,463 was expended in replacing wood culverts with stone arches; \$16,129 was expended on double track principally in extending the double track from Wheeler to Winslow on the Western Division. It is contemplated to add 25 miles of double track on the Western Division this year if the business of the road will warrant the expenditure. The company expended \$14,740 for real estate for new freight yard at Canton, O., and for land purchased at Mansfield for freight station.

Quincy, Omaha & Kansas City.—The foreclosure sale of this road came up for argument in the State Court at Hannibal, Mo., on June 14, but at the request of the bondholders the decree of sale was postponed until August. The road is to be reorganized by the interests controlling the Kansas City, Pittsburgh & Gulf lines. It will secure an entrance into Kansas City in connection with that road through the Kansas City & Northern Connecting, which has been organized to build from Kansas City to connect with this road and the Omaha & St. Louis, also to be reorganized by the same interests.

Richmond, Nicholasville, Irvine & Beattyville.—The United States Court of Appeals at Cincinnati has reversed the decision of the lower courts in 19 cases against the Louisville, New Albany & Chicago. The directors, in a meeting held at Louisville, guaranteed the bonds of the above road for \$1,185,000. The stockholders failed to approve the action of the directors. The Court of Appeals holds that the action is legal under the laws of Kentucky and binds all the property of the company in Kentucky for all purchasers of the bonds, and also binds the property of the company in Indiana for all innocent purchasers of the bonds. About \$500,000 of the bonds are thus declared good.

St. Louis, Avoyelles & Southwestern.—H. J. Fitch has been appointed receiver of this road in Louisiana under a suit filed in the state court on June 15 by J. & W. Seligman & Co., of New York. The road was only completed this year from Bunkie to Simmesport, La., 26 miles, with a branch to Marksville, 10 miles. At Bunkie the road connects with the Texas & Pacific and then extends easterly through Avoyelles Parish.

Sunbury & Lewiston.—The company has sold \$500,000 forty-year four per cent. first mortgage gold bonds to Kuhn, Loeb & Co., of New York. The new issue takes the place of an equal amount of seven per cent. bonds maturing July 1. The refunding saves the company \$15,000 a year in interest charges. It is understood that the price received for the new bonds was 103.15, which would reduce the interest about 3.85-100 per cent. The road is one of the operated lines of the Pennsylvania.

Electric Railroad News.

Annisette, Ala.—The Annisette Electric Co. has been incorporated, with a capital stock of \$50,000, to succeed Howard W. Seaton, Trustee, in the ownership of the Noble Street and Union Passenger Depot Electric Car Co.'s lines. H. W. Seaton was elected President, R. P. Huger Vice-President and J. R. Rees Secretary.

Cincinnati, O.—The proposition to issue \$1,000,000 of new stock and the same amount of gold five per cent. second mortgage bonds was unanimously adopted at a meeting of the stockholders of the Cincinnati, Newport & Covington Street Railway Co. on June 16. The former capital was \$3,000,000, and the bonded indebtedness was the same. Now the stock is increased to \$4,000,000, and the bonded indebtedness will be raised to the same sum.

Cohoes, N. Y.—The controlling interest of the Cohoes City Railroad has been purchased by Robert C. Pruyn, President of the Albany City Railway Co.

Dayton, O.—The White Electric and the Wayne & Fifth Street Car Companies have been consolidated as the People's Electric Street Car Co. The capital stock of the White line is \$700,000, and that of the Wayne and Fifth Street lines is \$300,000. The consolidation includes about 25 miles of track, which will be equipped with all modern electrical appliances.

Oshkosh, Wis.—The Oshkosh City Attorney has been directed by the Council to take steps for the annulment of the franchise secured by the Central Wisconsin Electric Railway Co. three years ago. The company built only three miles of road, and is now in the hands of a receiver.

TRAFFIC.

Traffic Notes.

The Southern Railway now runs a through vestibuled train between Norfolk, Va., and Chattanooga, Tenn.

Texas papers report that the Missouri, Kansas & Texas has contracted to carry 8,000 carloads of wheat from Kansas to Galveston for export.

The York River line of steamers will begin running between Baltimore and Norfolk on July 1. This line is to run in the interest of the Southern Railway.

Press dispatches from Galveston state that the Galveston Wharf Company is to build two new grain elevators at Galveston, one to hold 500,000 bushels and the other 100,000.

The production of anthracite coal in the month of May was 3,125,170 tons, an increase of 111,980 tons over May, 1895. For the five months ending with May the output was 15,584,458 tons, about 1,200,000 tons less than in 1895, and about the same amount more than in 1894.

On Sunday, June 21, the electric street railroads of Brooklyn, N. Y., carried over 525,000 passengers. These lines carry a large share of the Coney Island traffic. The officers of some of the companies say that, when the cars are crowded, about 25 per cent. of the passengers get through without paying.

The Central Vermont has its two new freight steamers now in service between New York and New London. Their carrying capacity is 1,250 tons each, and the New York agent announces that they will make the trip in seven hours or less; and freight leaving New York at 7 p. m. is advertised to reach Brattleboro, Vt., at 3:25 p. m. the next day.

The Managers of the Joint Traffic Association have agreed to a resolution that the railroads hereafter must confine their advertising to regularly published standard newspapers and periodicals, of general circulation, published at regular intervals. Circulars, catalogues, programmes of entertainments and such like publications are given the cold shoulder.

On the Fall River steamer last Saturday night, as it was about to start from New York, a drummer was arrested for trying to get passengers to have his trunks checked on their tickets. He had six trunks and was running around trying to find five individuals to check one trunk each. There being no law prohibiting such an act as this, the police magistrate let the prisoner off with a lecture.

The Board of Managers of the Joint Traffic Association last week heard formal arguments by representatives of various roads which desire changes in the differentials on passenger rates, the most important application being that of the Pennsylvania concerning rates from Chicago to New York by the Panhandle route. The Baltimore & Ohio Southwestern wants a differential from St. Louis and the Erie one from Cincinnati.

Chicago Traffic Matters.

CHICAGO, June 24, 1896.

The trouble over dairy rates from the Northwest to the East has been settled by the Soo agreeing to restore rates to the old basis of \$1.05 on June 30.

The Chicago-Peoria lines have made big cuts in rates to the Democratic State Convention in the latter city. The round-trip rate originally agreed to from Chicago was \$4.25, but the Wabash and the Toledo, Peoria & Western were reported to have cut this rate 50 per cent., and the Rock Island announced an open round-trip rate of \$2, which was met by the other interested lines. As a consequence, legitimate business will suffer.

At a meeting of the Transcontinental Passenger Association in this city, the Canadian Pacific agreed to withhold its notice of withdrawal from that organization until the next regular meeting in July. The Canadian Pacific did this on the promise of the western roads to use every effort to have the west-bound differential rates of that road via Port Arthur recognized by the trunk lines.

The roads of the Central Passenger Committee have agreed that for all political meetings to be held from June until Nov. 30, a rate of one fare for the round trip shall be granted from all Central Passenger Committee points within a radius of 50 miles of the place of meeting.

The executive officers of the roads of the Western Freight Association have agreed to give Chairman Midgley carte blanche in equalizing the divisions of traffic under the percentages already fixed. The authority to equalize under this agreement has been heretofore vested in the executive officers.

The Chicago & Northwestern's sleeping-car service between this city and St. Paul and Duluth has been formally turned over to the Wagner Company, and the limited trains have magnificent new cars throughout. Each train consists of two day cars, a buffet and library car, one 16-section sleeper, one 12-section sleeper, one compartment car, and a dining-car. The trains are pronounced by critics to be the finest now running out of Chicago, which means a good deal.

Total shipments to the East via lake last week amounted to 66,240 tons, of which 62,316 tons were grain. Total all-rail shipments, exclusive of live stock, for the week amounted to 61,002 tons, compared with 62,202 tons for the preceding week, a decrease of 1,200 tons, and against 53,402 tons for the corresponding week of last year. The proportions carried by each road were as follows:

Roads.	WEEK TO JUNE 20.		WEEK TO JUNE 14.	
	Tons.	p. c.	Tons.	p. c.
Michigan Central.....	5,909	9.8	6,013	9.7
Wabash.....	7,276	11.9	7,423	11.9
Lake Shore & Mich. South.	7,918	13.0	8,799	14.2
Pitts., Ft. Wayne & Chicago	7,002	11.5	7,304	11.7
Pitts., Cin., Chi. & St. Louis.	5,746	9.4	6,023	9.7
Baltimore & Ohio.....	4,616	7.6	4,971	8.0
Chicago & Grand Trunk.....	6,661	10.9	5,978	9.6
New York, Chi. & St. Louis.	6,404	10.5	6,653	9.7
Erie.....	6,741	11.1	6,800	11.0
C., C. & St. Louis.....	2,627	4.3	2,798	4.5
Totals.....	61,002	100.0	62,202	100.0

Of the above shipments 2,855 tons were flour, 26,449 tons grain, 11,306 tons provisions, 9,151 tons dressed beef, 3,126 tons butter, 1,179 tons hides, and 5,209 tons lumber.